The Dissertation Committee for Carla Elizabeth Klehm Certifies that this is the approved version of the following dissertation:

Regional Dynamics and Local Dialectics in Iron Age Botswana: Case Studies from the Hinterland in the Bosutswe Region

Committee:

James R. Denbow, Supervisor

Enrique Rodriguez Alegria

Samuel Wilson

Maria Franklin

Toyin Falola

Regional Dynamics and Local Dialectics in Iron Age Botswana: Case Studies from the Hinterland in the Bosutswe Region

by

Carla Elizabeth Klehm, B.A., M.A.

Dissertation

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Doctor of Philosophy

The University of Texas at Austin

August 2013

Dedication

Dissertations happen mostly behind the scenes. From when I began to this very moment as I type, my backdrop and backrest has been provided by my parents, Arnie and Maggie Klehm. My first year in Botswana in 2009, I wrote the follow in an email to my friends and family:

"Even when standing on the top of the big hill, looking out and out and out, I find myself letting the space expand, folding up the corners of some invisible blanket into me. I look forward to being back in my other patterns, those rhythms and frustrations and even boredoms when it comes, and with the people whom I love. That thought makes me smile."

Mom and Dad, those people are you. And to you, my first dedication with a smile.

Acknowledgements

A number of collaborators, mentors, colleagues, and friends were integral for supporting me throughout this research process in order to get to this point – this page – that you see here today. First and foremost, I would like to acknowledge my collaborators directly involved in this dissertation. The work and advice of James Denbow, Eileen Ernenwein, Laure Dussubieux, and Marvin Kay provided expertise in their respective fields, expanding both what I could do in the dissertation and my skill set. My dissertation members have provided guidance and care through countless discussions and revisions. This includes Jim Denbow (again), as well as Enrique Rodriguez-Alegria, Sam Wilson, Maria Franklin, and Toyin Falola. Various institutions have also been integral to this dissertation; I would like to acknowledge the National Science Foundation (BCS-1115148 and BCS-0922868), National Endowment for Humanities, American Philosophical Society, Beta Analytic, University of Texas at Austin, Center for Advanced Spatial Technologies at the University of Arkansas-Fayetteville, Field Museum of Chicago, University of Botswana, National Museum of Botswana, Khama III Museum in Serowe, the community of Mmashoro, and Eddie Eifling for his copy edits. My support network of mentors and colleagues have served as a warm family; Tim Earle has played an especially important role, along with Sarah Mothulatshipi, Morongwa Mosothwane, Stefania Merlo, Chap Kusimba, Jesse Casana, John Kappelman, Stella Basinyi, and Mothusi Maeletsa. Kate Kanne, Borbola Nyiri, Katie Simon, Shannon Dugan Iverson, and Emily Root Garey have been superior peers, in sickness and in health. Last, but most certainly the foundation of this chapter of my life, has been the unwavering support of my parents, Arnie and Maggie, and Kurt Eifling. Thank you to you all.

Regional Dynamics and Local Dialectics in Iron Age Botswana: Case Studies from the Hinterland in the Bosutswe Region

Carla Elizabeth Klehm, PhD

The University of Texas at Austin, 2013

Supervisor: James R. Denbow

Since the 1980's, few have included sub-Saharan African in worldwide comparative discussion of complex societies. This exclusion is at the expense of challenging embedded notions of the development of complexity. The trading polity Bosutswe (700-1700 AD) at the eastern edge of the Kalahari Desert in Botswana and its surrounding region provide a perfect example of why this is important. In the Bosutswe region, complexity was not be driven by external factors, elites, or the core, but arose from local actors and out of localized contexts. During its occupation, Bosutswe became increasingly involved with long-distance trade in the Indian Ocean exchange network, linking trade from the African coast to the interior. At Bosutswe, glass beads associated with long-distance trade and local ostrich eggshell beads attest to a strong local economy supported by cattle herding, subsistence farming, and iron and bronze manufacture. This trade with Bosutswe peaked from 1200-1450 AD, when social stratification at Bosutswe became spatially and materially evident. This dissertation focuses on Bosutswe's trajectory through the point of view of two nearby settlements, Khubu la Dintša (1220-1420 AD) and Mmadipudi Hill (~550-1200 AD), to reconstruct the local economy and landscape. Expanding the concept of the polity to one situated in a landscape of human

and environmental interchange provides a key comparative insight to other studies of complex societies and variable trajectories of societal development. The Bosutswe landscape and by extension Iron Age southern Africa can be conceptualized as a patchwork of landmark hilltop polity centers on a scrub desert landscape of agropastoral activity surrounded by smaller hilltop and ground sites. The local dynamic may have involved strategies by Bosutswe to mitigate environmental characteristics of low rainfall, opportunistic hunting and herding opportunities for the surrounding communities, and alliances between these communities for security in a politically unstable era. Everyday life would have involved issues about land use, as over time herders and farmers exhausted pastures, soil fertility, and firewood. Treating these early polities as landscapes of human, animal, and environmental relationships will help revise the way early complex societies are conceptualized: not as individual sites, but as local landscapes of power.

Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

This dissertation research explores the development of complex societies and inequality during the southern African Iron Age (900-1650 AD). Specifically, it focuses on the hilltop trading center called Bosutswe (700-1700 AD), located at the eastern edge of the Kalahari Desert in Botswana. During its occupation, Bosutswe became increasingly involved with long-distance trade in the Indian Ocean exchange network, linking trade from the African coast across the Kalahari to the interior (Denbow 1990, Denbow 1999, Denbow and Miller 2007, Denbow et al. 2008). At Bosutswe, glass beads associated with long-distance trade and local ostrich eggshell beads attest to a strong local economy supported by cattle herding, subsistence farming, and iron and bronze manufacture. This trade with Bosutswe peaked from 1200-1450 AD, in what is known as the Early and Middle Lose periods. During these periods, social stratification at Bosutswe became spatially and materially evident. This dissertation focuses on Bosutswe's trajectory through the point of view of two nearby settlements, Khubu la Dintša (1220-1420 AD) and Mmadipudi Hill (~550-1200 AD). Archaeological excavations at Khubu la Dintša and a geophysical survey at Mmadipudi Hill investigate the local social, political, and economic relationships that occurred in the Bosutswe region. The comparison of data among Khubu la Dintša and Mmadipudi Hill and Bosutswe is among the first attempts to reconstruct the surrounding landscape around Bosutswe and local economy. Expanding the concept of the polity to one situated in a landscape of human and environmental interchange provides a key comparative insight to other studies of complex societies and variable trajectories of societal development.

The landscape that surrounds Bosutswe contains smaller hilltop settlements, sites linked to the trade center through the opportunities that proximity to Bosutswe provided. These opportunities would have included supplying the center with food crops and domesticates such as cattle, goats, and sheep; managing grazing lands and agricultural fields; providing raw materials such as lithics and metal ore for manufacture and trade; and serving as settlement areas for traders coming from around Botswana that brought goods such as salt and exotic animals for trade. Research at two of these sites, Khubu la Dintša and Mmadipudi Hill, is a step towards understanding the variety of peoples, interactions, motives, and experiences that encapsulate complex societies in the African interior.

A broader sampling of different types of African Iron Age sites allows for a more representative picture of how early complex societies looked and functioned. The landscape around Bosutswe and by extension Iron Age southern Africa is therefore conceptualized as a mosaic of landmark hilltop polity centers on a scrub desert landscape of agro-pastoral activity surrounded by smaller hilltop and ground sites. This case study contributes towards a growing body of literature on prehistoric Africa that calls for more local considerations of complexity and inequality (Hall 1987; Hall and Markell 1993; Kent 2002; S. Kusimba 2003; S. McIntosh 1999; Mothulatshipi 2008; Pwiti 2005; Reid 2005; Stahl 1999, 2004; Thorp 1997). A few of these scholars suggest that neither complexity nor inequality were necessarily the outcomes of external trade, nor were they necessarily driven by core urban centers (S. McIntosh 1999; Stahl 1999, 2004). The Bosutswe region provides an excellent example of how small sites are integral in the development and success of larger sites. Small sites in the hinterland region were a crucial part of this complex society and may have limited the consolidation of class-based power through their social and economic relationships with the main center. Treating these early polities as landscapes of human, animal, and environmental relationships helps to revise the way early complex societies are conceptualized: not as individual sites, but as negotiated landscapes of power.

Archaeological research at Bosutswe has been ongoing for over twenty years, resulting in a rich database describing the site's rise and collapse (Denbow 1999, Denbow and Miller 2007, Denbow et al. 2008). However, crucial relationships between Bosutswe and its surrounding sites have only been inferred. These relationships may have been necessary to its success and may have impacted how inequality developed at Bosutswe. Local dynamics may have involved strategies to mitigate environmental characteristics of low rainfall, opportunistic hunting and herding opportunities for the surrounding communities, and alliances between these communities for security in a politically unstable era. Status came to be defined by wealth in cattle, and while long-distance exchange allowed elites to purchase more cattle, the marginal environment of the Kalahari Desert likely encouraged the inclusion and incorporation of local groups to gain access to good grazing grounds. Everyday life would have involved issues about land use, as over time herders and farmers exhausted pastures, soil fertility, and firewood. These are fundamentally local activities that compliment earlier foci on regional structures of political centralization.

Drawing from theories on complexity and inequality (Calabrese 2005, Hall 1987, Huffman 2010, Killick 2009, S. McIntosh 1999, Paynter 1989, Stahl 1999), societal mosaics (Pauketat 2004, Stahl 2004), prestige goods economies (Earle 1997, Ekholm 1972) power strategies (Blanton et al. 1996, Feinman et al. 2000, Joyce et al. 2001, S. McIntosh 1999), and heterarchical societies (Ehrenreich, Crumley, and Levy 1995), this dissertation evaluates the material correlates of the local political economy that link sites in the Bosutswe region. The materials used to evaluate questions about complexity and inequality in the Bosutswe region include luxury trade goods, diet, subsistence strategies, ceramics, houses, kraals, and stone walls. Broad-scale horizontal excavations were carried out at Khubu la Dintša to understand its function vis-à-vis Bosutswe and intra-site and inter-site variation. Quantitative and spatial analyses used similarities, differences, and correlations between these materials in tandem with earlier research at Bosutswe to assess changes in relative dependency and inequality between these sites in the Early and Middle Lose periods. This project contributes to anthropological debates on complexity through its emphasis on the regional mosaic's crucial contribution to the rise of complex societies and state formation in the region. Shifting the focus to the hinterland includes other actors in the story of Bosutswe, and through this shift their role in the region's trajectory becomes emphasized. The case of Khubu la Dintša demonstrates how complexity may not be driven exclusively by external factors such as long-distance trade, elites such as the Lose elite, or the core – Bosutswe itself, but may arise from local actors and out of localized contexts.

CHAPTER ORGANIZATION

The following chapters work sequentially to build a picture of complexity and inequality in the Bosutswe region, and the social, political, and economic relationships that were involved.

Chapter 2 provides the theoretical framework for the dissertation, which concerns studies of early complex societies and the development of inequality. Traditionally, African Iron Age research addressed complexity by focusing on large, sedentary sites, controlling elites, technology, and inequality; smaller sites and hunter-gatherers were less often incorporated into these discussions (Connah 1998; Hall 1990, 1993; Hall and Markell 1993; Kent 2002; S. Kusimba 2003, LaViolette and Fleisher 2005, Lane 1998;

Mitchell 2005; Robertshaw 1990, 1999; Pwiti 2005; Reid 2005; Sinclair et al. 1993; Stahl 1999, 2001, 2004; Thorp 1997; see also Joyce et al. 2001). This dissertation contributes to this scholarship by proposing that the regional mosaic of Bosutswe is a complex system not easily disentangled (Stahl 2004). Power is the capacity for collective action (S. McIntosh 1999), and polity dynamics may be understood through the development of a prestige goods economy (Earle 1997, Ekholm 1972), network and corporate power strategies (Blanton et al. 1996, Feinman et al. 2000) and local political relations of hierarchy and heterarchy (Crumley 1995, Stahl 2004). Power does not only operate in a top-down fashion, and notions of power can theoretically accommodate both elites, polities, and local, less powerful hinterland sites and people. Instead of privileging elites and centers, this case study focuses on local social and economic power relationships with satellite sites to explain how one African complex society, Bosutswe, operated and flourished for over 1000 years in a marginal environment. Incorporating the hinterland into debates about emerging complexity adds to and, at times, refutes causal notions of core or elite dominance.

Chapter 3 provides a literature review on Iron Age Africa and African involvement in the Indian Ocean trade network. The rise of complex societies in southern Africa is emphasized, primarily through the work of Huffman (1982, 1986a, 1986b, 1996a, 2007, 2009, 2010) and Denbow (1982, 1983, 1984, 1986, 1990, 1999; Denbow and Miller 2007; Denbow et al. 2008). These polities were associated with the emergence of social complexity and class-based inequality in the region, resulting in major shifts in settlement patterns, economic systems, and worldviews (Huffman 2010). Huffman (2010), Hall (1987), and Calabrese (2005) considered the political and social implications involved in the development of these complex societies. They noted that status was not only quantified by its traditional form, cattle, but also through new exotic trade goods.

Access to these goods was controlled and contested, and their redistribution related to class differences that transcend economic valuation. Archaeological background is provided about Iron Age settlement patterns and material culture associated with African Iron Age sites. The polities of K2, Mapungubwe, and Great Zimbabwe are emphasized specifically, as these sites are referred to again in upcoming chapters. Maps of the Indian Ocean trade network and of Southern African archaeological sites are provided.

Chapter 4 narrows the focus of archaeological inquiry to the Bosutswe region. A description of the natural geology and climate contextualizes the Bosutswe region in a scrub desert environment that straddles hardveld and sandveld ecoregions (Denbow et al. 2008, Green 1966, Holmgren et al. 1999, Lee-Thorp et al. 2001, Machacha et al. 1985, Mosothwane 2010, J. Smith 2005, Voigt 1983). Issues such as resource scarcity, unpredictable rainfall, and land degradation were potential issues with which inhabitants of these sedentary, agropastoral settlements would have had to contend (Hoffman and Ashwell 2001, Huffman 2000, A. Rosen 2007, J. Smith 2005, J. Smith and S. Hall 1999, Verstraete and Schwartz 1991). An overview of Denbow's twenty-plus years of research describes the polity of Bosutswe, a major trade center located at the eastern edge of the Kalahari Desert (Atwood 2005, Denbow 1990, Denbow and Miller 2007, Denbow et al. 2008, Dubroc 2010, Plug 1996, Thebe 2004). The occupation of Bosutswe (700-1700 AD) is divided into five periods that are differentiated by ceramic traditions, metallurgical technologies, glass beads, and broader regional dynamics in southern Africa. Major developments at Bosutswe include: its growth from a cattle post to major trading center, the resulting increase in status goods from its participation in the Indian Ocean exchange network, a change in herd management strategies, the major burning episode at the site, the establishment of Lose elite and inequality at the site, and eventual abandonment. Many of these events, from the change in herding strategies, major burning episode, and the development of elite, occur during the Lose period, 1200-1700 AD. Lose elites controlled access to long-distance trade routes, their wealth apparent in the abundance of high status goods such as cattle, metal, and beads. The Lose elite distinguished themselves spatially from commoner families on the hilltop, the power from their extra-local connections further emphasized through a distinct ceramic assemblage that mimicked Mapungubwe ceramics. Khubu la Dintša, a stone-walled site twelve kilometers northwest of Bosutswe, and Mmadipudi Hill, three kilometers west of Bosutswe, are introduced as neighboring settlements in the Bosutswe region. Maps and photos are provided.

Chapter 5 defines the research questions involved in this dissertation as well as the methodology used to pursue them. As the primary research was carried out at Khubu la Dintša, research questions focus on this site and on the Lose period specifically. These questions build from simple topics about dating and artifact concentrations towards more complex inquiries into polity and hinterland power relationships and their implication for the development of complexity and inequality in the Bosutswe region and beyond. Research questions are multi-scalar and include:

- Where does Khubu la Dintša fit into the Bosutswe chronology?
- What was the function of its stone walls? How is Khubu la Dintša linked socially and economically to Bosutswe?
- Is there a hierarchy among the sites?
- How do major changes at Bosutswe (increasing participation in long-distance trade, changes in herd management strategy, the burning episode, establishment of Lose elites, decreasing wealth) and throughout southern Africa relate to Khubu la Dintša?

- How do the dynamics of the Bosutswe region fit into the broader fluctuations in the Indian Ocean trade network?
- What can the Bosutswe region contribute towards discussions of complex societies and inequality in prehistoric societies?

Following the research questions, the methodology of the archaeological excavations at Khubu la Dintša is discussed. Surface survey and test units helped define site extent and areas for further excavation. The ten 1x1m test units provided a sampling of artifacts (ceramics, bones, lithics, beads, and metals) that are similar to other Iron Age assemblages. Khubu la Dintša may have been occupied for only a brief period of time, as the units contained 35-55cm in deposit. From these test units, four were selected for expansion into 4x4m excavation units.

Chapter 6 presents initial observations about the Khubu la Dintša excavations. Radiocarbon dates from the units (1220-1420 AD) situate Khubu la Dintša in the Early and Middle Lose periods of the Bosutswe cultural chronology (1200-1450 AD), contemporaneous with the polities of Mapungubwe and Great Zimbabwe. Photos of the cleared stone walls and a description of their locations in terms of length and hill slope support the notion that these walls are defensive, built during the Middle Lose period of the settlement. These defensive stone walls suggest a need for protection of the site, its people, and its resources; relation to regional instability or the increasing role of the hinterland in the Bosutswe region's economy are two strong possibilities for their construction. The stone walls border both ends of the site, restricting access to the main occupation area. The other sides are naturally fortified by the hilltop. In an area of the hilltop where the slope is less steep, a third stone wall fortifies that edge. Broad definitions of the four larger excavation units (house, midden, kraal, and "household area") are assigned on the basis of the soil types and artifacts found in them. These different areas help define general activities at the site. Khubu la Dintša was a smaller, agropastoral settlement with a kraal in the center, small production areas for beads, and storage activities and status items related to households.

Chapter 7 discusses the results from the Khubu la Dintša excavations. Typology of the ceramic decoration establishes that there was a significant Lose elite ceramic component to the ceramic assemblage at Khubu la Dintša. Lose ceramics have only been found at two other sites in Botswana, Lose and Bosutswe (Denbow and Miller 2007, Denbow et al. 2008, Kiyaga-Mulindwa 1990, Lepionka 1979). At the latter, Lose ceramics were part of a larger cultural package that symbolizes the establishment of an elite at the site intimately connected to long-distance trade. Lose ceramics at Khubu la Dintša are the first line of evidence that suggests the site played an important economic role in the Bosutswe region that necessitated social and political connections. Economic dependency may have been negotiated through social relationships and political alliances, as indicated by the sharing of a Lose identity. Other materials found at the site, such as glass, metal, and shell beads, support this theory. Glass beads are a luxury good associated with the Indian Ocean trade network, commonly traded into the African interior due to their portability and social significance (Wood 2000, 2005, 2010). Metals and metallurgy are economically and symbolically powerful; metals such as bronze and gold, iron tools, and metal beads indicate status (Denbow and Miller 2007). Glass, metal, and shell beads are present in great quantities at Khubu la Dintša. In fact, glass and metal beads are more highly concentrated here than in the Lose elite residences at Bosutswe.

Chapter 8 examines the glass bead collection at Khubu la Dintša again, this time through macroscopic and chemical analyses. As more than 200 glass beads were found at Khubu la Dintša – more than three times the concentration at the elite residences of Bosutswe – the beads warranted additional documentation and, if possible, determination of their bead series and origin. Twenty-two glass beads from Khubu la Dintša underwent macroscopic analysis using Wood's (2011) guidelines for Southern African glass beads. Chemical analysis using a Laser Ablation Inductively Coupled Plasma Mass Spectrometer (LA-ICP-MS) was also performed on the glass beads at the Field Museum in Chicago with the assistance of Dr. Laure Dussubieux. The elemental composition of the beads clustered into two regions of origin and followed stratigraphic and cultural layers at the two sites. Twenty-one beads were plant ash soda beads, associated with Mapungubwe Oblate or Zimbabwe series beads. It was difficult to chemically categorize these beads; however, the beads were likely Mapungubwe Oblate (Dussubieux in conversation 2013). However, the bead colors suggested even a mixture of these two bead series would not properly explain the quantities of yellow, black, white, and turquoise beads at the site. Some selection, either on the part of trade partners with Bosutswe, Bosutswe itself, or the population at Khubu la Dintša likely took place. This raises questions about the symbolic importance of color and valuation in Iron Age societies. That glass beads and their colors remain significant in southern African societies to this day indicates the extraordinary importance that glass beads may have played. The last was a high alumina-mineral soda glass bead, either East Coast Indo-Pacific or Khami Indo-Pacific (likely the former); either would come from south Asia. If the bead is East Coast Indo-Pacific, this bead may have been from an earlier occupation at Khubu la Dintša or passed down as an heirloom through generations.

Chapter 9 integrates the observations and data described in Chapters 6, 7, and 8 with the proposed research questions from Chapter 5. The Khubu la Dintša research speaks to the growth of a prestige goods economy in the Bosutswe region associated with increasing long-distance trade. The defensive stone walls at Khubu la Dintša provide an indication that the political ties between the Bosutswe and Khubu la Dintša were strong.

These walls suggest that investment in the protection of an asset like Khubu la Dintša and its resources was necessary during this period of political uncertainty in the region. The presence of elite Lose ceramics and concentrations of glass and metal beads imply important social and political ties with the elite at Bosutswe. These status goods may have been part of inclusionary network strategies by the Lose elite to secure access to grazing areas nearby. Societal emphasis on status through cattle and environmental limitations may have led to transactions that transcended economic exchange and included social and political ties. This may have limited the expansion of class-based inequality, as the polity and the hinterland were interdependent. Alternatively, a small group or relatives of the Bosutswe elite may have settled at Khubu la Dintša to tend to these herds and grazing and agricultural lands. Another scenario that speaks to the wealth at Khubu la Dintša involves a major burn episode that swept Bosutswe sometime after Mapungubwe's collapse. As a result of that burning, a small settlement of Lose elites may have settled at Khubu la Dintša until the region was determined to be more stable or at least more habitable. This may be the result of an attempt by the Lose elites at Bosutswe to control trade in the great region during this power void, to an unknown degree of success. These scenarios are complimentary, rather than contradictory; they are two ways of looking at the same set of data, and one may not necessarily preclude the other from being true. The first places a primary on local relationships; the latter favors regional dynamics. In either scenario, the growth of a prestige goods economy relates to participation in long-distance trade, and network strategies by a growing elite impacted the local settlement pattern.

Chapter 10 covers the geophysical survey and test excavations at Mmadipudi Hill (~550-1200 AD). The geophysical survey at Mmadipudi Hill was part of a larger pilot study of three sites across Botswana to explore the potential of geophysical survey in the country. This survey was supported by a National Endowment for the Humanities grant through the Center for Advanced Spatial Technologies at the University of Arkansas and the National Museum of Botswana. The geophysical survey used low field magnetic susceptibility to define Central Cattle Pattern settlement features such as the kraal, household clusters, and individual households. These results were then ground-truthed through a 1x4m test trench, which confirmed the detection of a house in an area of high magnetic susceptibility (MS) values. The assemblage from the test unit provides data to help fit Mmadipudi Hill into the Taukome and Toutswe periods of the Bosutswe chronology. Four glass beads underwent chemical analysis and extended the site's occupation to a later period than previously thought. Similar to Chapter 7, a description of the data and implications of the preliminary research at Mmadipudi Hill is briefly discussed. Mmadipudi Hill was likely a small cattle post that was abandoned when the region began to participate more intensely in long-distance trade. The abandonment of Mmadipudi Hill at the beginning of the Lose period may be due to: 1) its proximity to Bosutswe and the political challenges it represented; 2) its proximity to Bosutswe and increasing competition with it for grazing lands and water resources; or 3) degradation due to overgrazing. Mmadipudi Hill's occupation serves as a snapshot of an earlier period of time in the Bosutswe region before inequality permanently reshaped social and economic relationships.

Chapter 11 contains a relatively short analysis of an artifact type found at both Mmadipudi Hill and Khubu la Dintša: lithics. Lithics are often the subject of focus for Stone Age sites, but are repeatedly overlooked and even ignored in Iron Age contexts. The omission is part of a larger evolutionary narrative of technological advancement, where metal tools are viewed as a "superior" replacement for stone tools. Lithics are often relegated as an inferior option taken when metal is unavailable, primarily related to groups of lesser status (Denbow 1990, 1999; Thebe 2004). The discussion of lithics at Mmadipudi Hill and Khubu la Dintša contribute towards complicating these stereotypes (see also Thebe 2004). Lithics were present and used in everyday activities, perhaps manufactured for trade. Lithic categorization of these 300+ lithics suggests that lithics were not only present but played an active role in everyday activity. Mmadipudi Hill and other hills in the Bosutswe region are one of the few places in the area where chert, the raw material often used for lithics, can be found. High concentrations of chert and lithics at Mmadipudi Hill suggest they may have been manufactured for trade as well as use (Denbow 1990). Use-wear analysis was performed on twenty-two lithic tools identified through macroscopic lithic categorization with the assistance of Dr. Marvin Kay at the University of Arkansas-Fayetteville. Several of these tools showed signs of use-wear, indicating that they were at least occasionally used by the local, sedentary Iron Age population. Lithics no only played a role in these societies, but may have been chosen as the simplest, more convenient way to carry out a task.

Chapter 12 serves as the conclusion to this dissertation's thesis. The research questions and conclusions drawn from the archaeological excavations and geophysical survey are reiterated. The chapter emphasizes the relationship among the sites as part of Bosutswe's development, maintenance, and collapse. Where the Bosutswe region fits into broader processes of the southern African Iron Age and the Indian Ocean trade network is also mentioned to connect this locally-focused study to larger, regional perspectives. The chapter concludes by advocating for the inclusion of smaller sites into theories of complex societies, as they provide a more representative picture of everyday life, populating the hinterland with people, productive strategies, and differing interests.

All archaeological research is subject to limitations in resources, and the restrictions of time, money, and labor are discussed in Chapter 13. Suggestions for expanding excavations at Khubu la Dintša, analysis of the faunal assemblages, and expansion of the survey at Mmadipudi Hill could serve to better address this dissertation's research questions as well as develop new avenues for inquiry. Research at Khubu la Dintša and Mmadipudi Hill provides an example of what can be learned by studying sites as a region. Potential for future research includes the inclusion of ground sites and hunter-gathering communities into the concept of the region in order to create a more holistic picture of the landscape. Further engagement with the local, recent history of Khubu la Dintša could help expand perspectives on the importance of Iron Age sites in relation to modern day events.

COLLABORATIONS

This dissertation involved a series of collaborations that should be noted and emphasized. As mentioned earlier, James Denbow's twenty-plus years of excavations at Bosutswe as well as other sites in Botswana established a solid chronology of its prehistory and highlighted the region's importance and involvement in the Indian Ocean trade. His systematic excavation methods provide an invaluable source for comparison. Data from the dissertation research was collected in a similar fashion to optimize this opportunity. The geophysical survey at Mmadipudi Hill and two other sites in Botswana, Nyungwe and Lose, were conducted in collaboration with Dr. Eileen Ernenwein and Katie Simon from the Center for Advanced Spatial Technologies at the University of Arkansas-Fayetteville, and for Nyungwe with the National Museum of Botswana. Additional collaborations include the use-wear analysis of the lithics by Dr. Marvin Kay from the University of Arkansas-Fayetteville and mass spectrometry of the glass beads with Dr. Laure Dussubieux from The Field Museum, Chicago.

Chapter Two: Theoretical Considerations

General prehistory textbooks seldom use examples from sub-Saharan Africa in worldwide comparative discussions of early complex societies. When they do, it is often in reference to ancient Egypt (S. McIntosh 1999, Mitchell 2005, Yoffee 2005; e.g. Fagan 2011, Greene and Moore 2010, Price and Feinman 2012). Authors have explained this position as due to publishers' insistence (Kusimba in conversation 2012). However, the continued exclusion of the region represents a lost opportunity to challenge embedded notions about how power operated in prehistoric societies. Robert Paynter's definition of complexity as "the degree of internal differentiation (horizontal as well as vertical) and the intricacy of relations within a system" (S. McIntosh 1999:11, Paynter 1989:360) serves well for this case study, as it allows for a multiplicity of actors and communities on the landscape. Through a focus on multiple actors, with potentially differing interests, the focus is shifted on relationships between people and power, and the strategies, resistance, negotiation, compromise, and outcomes involved. African case studies include examples of societies that are heterarchical, decentralized, and hegemonic (S. McIntosh 1999, Stahl 1999). Including African societies in discussions of complexity has great value, but they should be presented in a way that is diachronic and flexible with regard to shifts in boundaries of cultural association and identity. In doing so, we can be representative of the mosaic of peoples and the crucial social, political, and economic connections among them.

The trading polity Bosutswe (700-1700 AD) and its hinterland site Khubu la Dintša (1220-1420 AD) in Botswana serve as an excellent example of how crucial local connections were. The development of complex societies in southern Africa emerged from the participation in long-distance trade in prestige goods and cattle. However, exchanges between larger and smaller sites on the African landscape were also necessary for the development and support of complexity. Although inequality accompanied complexity at Bosutswe, the expansion of inequality in the region was limited by social and environmental constraints. Furthermore, shifting production, exchange, and consumption of goods impacted unstable socio-political bonds that react to such changes. Status, traditionally defined through cattle, became supplemented by another status item: glass beads from the Middle East and South Asia, obtained through long-distance trade. Both glass beads and access and affiliation with long-distance trade were commoditized, considered valuable for their rarity as well as the increased ability to obtain more cattle, extend kinship relations through marriage, and acquire support through redistribution of cattle and luxury goods. Control of these goods became another way that status was defined and distinguished. These prestige items were not subject to the same environmental constraints as cattle; however, as purchasing and consuming more cattle was a common goal, new power relationships formed to combat overgrazing and bush encroachment associated with increased herd size. Cattle exchange may have required a client-patron loaning system, where calves were given to these hinterland communities in exchange for a certain percentage of the offspring or meat tributary. These economic relationships would not have been without social implications, and alliances through marriage and gifts to hinterland communities would have occurred. These relationships would have been essential as satellite communities had persisting opportunities to "vote with their feet" (Earle 1991, S. McIntosh 1999). The dependence of the central polity of Bosutswe on these hinterland sites for good grazing grounds was matched by the need by the satellite communities on Bosutswe's participation in the regional trade network to create sufficient wealth for these opportunities. These bottom-up claims on power somewhat balanced the top-down exertion of central authority. Discussion of these dynamics in the Bosutswe region necessitates defining – and potentially redefining – what is meant by complexity, inequality, and the varying power strategies involved in the maintenance of status.

COMPLEXITY

African Iron Age research traditionally addressed issues of complexity to counter perceptions of a lack of development in the pre-European era (Connah 1998; Denbow 1983, 1990, 1999; Denbow and Miller 2007; Denbow et al. 2008; Huffman 1982, 1996a, 2000, 2007, 2009, 2010; C. Kusimba 1999; Lane and Segobye 1998; S. McIntosh 1999; Mitchell 2005; Robertshaw 1990; Shaw et al. 1993; Sinclair et al. 1993; Stahl 1999, 2004; Stahl and LaViolette 2009; Thorp 1995). Scholars have noted how this skewed research towards large sites (Lane 1998, LaViolette and Fleisher 2005), controlling elites and inequality (Stahl 1999, 2001; Joyce et al. 2001 for non-African examples), and technologies such as metallurgy and agriculture (Stahl 2004); and away from interconnections between societies of different scales and "the complex mosaic of technologies, productive strategies, and political forms" (Stahl 2004:146; Hall 1987, 1993; Hall and Markell 1993; Kent 2002; S. Kusimba 2003; Pwiti 2005; A. Reid 2005; Stahl 1999; Stahl and LaViolette 2009; Thorp 1997). In situations of emerging complexity, the role of hinterland peoples in questions of polity structure needs consideration (Dietler 1995, Killick 2009, Stein 1999, A. Smith 2003, Stahl 2004).

Archaeological research at Bosutswe has been ongoing for over twenty years, resulting in a rich database that described the site's rise and collapse. However, research has concentrated almost exclusively on the hilltop, and crucial relationships between Bosutswe and its surrounding sites have only been inferred. These relationships may have been necessary to the success of Bosutswe and may have impacted how inequality developed at Bosutswe. A large site such as Bosutswe did not operate in isolation, and the relationships that were built through trade changed the ways people lived and viewed the world. Local dynamics may have involved strategies by Bosutswe to mitigate environmental characteristics of low rainfall, opportunistic hunting and herding opportunities for the surrounding communities, and alliances between these communities for security in a politically unstable era. Status came to be defined by wealth in cattle, and while long-distance exchange allowed elites to purchase more cattle, the marginal environment of the Kalahari Desert likely encouraged the inclusion and incorporation of local groups to gain access to good grazing grounds. Everyday life would have involved issues about land use, as over time herders and farmers exhausted pastures, soil fertility, and firewood. These are fundamentally local activities. Expanding the concept of the polity to one situated in a landscape of human and environmental interchange provides a key comparative insight to other studies of complex societies and variable trajectories of societal development.

In the following chapters, excavations at Khubu la Dintša will compare the cycling of goods between Khubu la Dintša and Bosutswe to better understand the two communities' economic interdependence. Although Khubu la Dintša is only one of multiple hinterland sites surrounding Bosutswe, it serves as a good example of how local examinations further nuance our understanding of the development of complexity. Khubu la Dintša's occupation during the Early and Middle Lose periods, the height of trade and wealth at Bosutswe, suggests that it was tied to the opportunities that presented themselves with long-distance trade or to problems that evolved from that involvement. The necessity for expansion of farming and grazing lands may have been an opportunity for Khubu la Dintša to serve as a supporting community. Wealth and status resulted from the important role that Khubu la Dintša came to play in the Bosutswe region. Stone walls stand testament to that investment.

Stahl (2004) describes complexity as a regional mosaic that is difficult to break down into smaller parts. This accurately describes the Bosutswe region and its associated sites. The landscape around Bosutswe can be conceptualized as a mosaic of a landmark hilltop polity center on a scrub desert landscape of agropastoral activity surrounded by smaller hilltop and ground sites on this ecotone between the sandveld and hardveld. Instead of a lone urban polity on the African frontier, Bosutswe becomes located in a landscape filled with human, animal, and environmental relationships. This landscape is not unlike others found throughout Iron Age Africa. Societal mosaics that link together different environments, productive strategies, and groups of people result in a form of niche specialization (Kopytoff 1987, Stahl 2004). In the East African Iron Age, for example, groups were linked from the interior to the coast (C. Kusimba and S. Kusimba 2005, Robertshaw 1999). Specialized pastoralists and banana farmers interacted and lived among cattle, ivory, and iron producers while retaining societal boundaries (S. Kusimba 2003; C. Kusimba and S. Kusimba 2005; D. Reid 1996; Schoenbrun 1998, 1999). Similarly, there is a strong possibility that relationships between different types of communities took place at and around Bosutswe. There remains debate over whether or not Khoisan peoples interacted and traded with, cohabited with, or comprised these sedentary Iron Age communities (Denbow 1990, 1999; Mosothwane 2010; Sadr 1997; Wilmsen 1989; Wilmsen and Denbow 1990; cf. Lee 1979, Lee and DeVore 1968). The role of Khoisan peoples in the local and long-distance trade network would have involved the extraction of raw materials and commodities in exchange for livestock, pottery, iron and metal tools, metal jewelry and ostrich eggshell beads (Denbow 1990). These exchanges may also have provided opportunities for communities to cluster nearby more sedentary centers for trade. Evidence from elsewhere in Botswana suggests such relationships existed, such as at specular hematite mines and at a site that combines metalworking with hunting and lithic production in the Tsodilo Hills (Denbow 1999, Robbins et al. 1998; Chapter 13). The sites of concern in this dissertation – Khubu la Dintša and Mmadipudi Hill – are only entry points into describing local and regional interactions. The potential for future research into interactions between hunter-gatherer and agro-pastoralists continues in Chapter 13.

COMPLEXITY AND INEQUALITY

Models of early complex societies (Arnold 1996, Earle 1991, Feinman and Marcus 1998, Gregg 1991, Johnson and Earle 1987, Marcus 2008, Price and Feinman 2010, Trigger 2003) identify hierarchy and social inequality as hallmark socio-political components. Social inequality and rank stem from differential access to both material and non-material resources. This internal differentiation, or rank, may come from a variety of sources in the subsistence economy: technology, land, water, ritual, and knowledge. Inequality, by this definition, is about power, centralized or diffuse, and ranking that often can be quantified materially. Various sources of power exist, and partially define the stability and parameters of the positions of power. Sources of power include political affiliations, social relationships, military enforcement, ideological structures, and the economy. More than one can exist, and often they operate in tandem with one another. Economic power and social power (discussed later) are particularly highlighted in this dissertation. Economic power is derived from the control over production, use, and exchange of staple and prestige goods. Staple goods can be defined as the surplus of crops and animal products from a subsistence economy (Earle 1997). Prestige goods, mentioned throughout this dissertation in the context of the Indian Ocean trade, are valued objects due to their social contexts (Earle 1982, Friedman and Rowlands 1977). Status may be gained through control over the production, distribution, and consumption of staple goods, prestige goods, or both. Status is materialized through regular, repeated contact that these resources require (Ames 2007). Social power may be derived from economic power, and economic power can serve to either distinguish individuals or strengthen group associations (Mann 1986, Renfrew 1974). As Costin and Earle suggest, “differential access to certain goods confers real economic power and legitimizes existing social hierarchies in stratified societies” (Costin and Earle 1989:692). In their case study, the Inka state had control over long-distance goods as well as locally produced goods for the local population. Differential access to goods involved strategies of control, finance, and legitimization (Costin and Earle 1989:692). The state-controlled production of goods and their mobilization affected consumption patterns.

The subject of individual and group differentiation – its origins, development, rationalization, and institutionalization – comprises one of the core questions investigated by archaeologists. Chiefdoms, defined as "intermediate-level polities between small, village-based polities and large, bureaucratic states" (Earle 1997:14), have been at the center of these studies, as they are often attributed with the emergence of class-based hierarchies (Earle 1978, 1997; Johnson and Earle 1987; Renfrew 1973; Sahlins 1963; Service 1962). Bosutswe is one of these. Chiefdoms documented throughout the prehistoric and historic record demonstrate wide variability (Blanton et al. 1996; D'Altroy and Earle 1985; Drennen et al. 2010; Earle 1978, 1997; Ehrenreich, Crumley, and Fox 1995; S. McIntosh 1999; Mann 1986; Renfrew 1974; Wright 1984). Significantly, studies of chiefdoms have shown that control over prestige goods and/or staple goods are involved in processes of stratification (D'Altroy and Earle 1985, Earle 1997).

This, however, brings up the problem of intrinsically linking inequality with the development of complexity. Academic critiques have addressed the fallacy that inequality is an inevitable outcome of complex societies (Blanton et al. 1996, Chapman 2003, D'Altroy and Earle 1985, Diehl 2000, Ehrenreich, Crumley, and Fox 1995, Gledhill et al. 1985, Joyce et al. 2001, McGuire and Paynter 1991, Maisels 1987, S. McIntosh 1999, Price and Feinman 1995, Paynter 1989, A. Smith 2003, Yoffee 1993). Understanding inequality in early complex societies requires a direct look at how power is negotiated and maintained by parties through the distribution of material culture.

In the case study of the Bosutswe region, inequality and social power is discussed as rank along the lines of individual and hereditary status. The Indian Ocean trade played a crucial role in the development of increasingly visible status formation and political elaboration during the African Iron Age (600-1750 AD) (Chapter 3). This trade network offered economic opportunities for Bosutswe to trade cattle, salt, ivory, and other resources. Smaller settlements aggregated around Bosutswe as these markets developed. Regional trade with Bosutswe peaked from 1200-1450 AD, and during this period social stratification at Bosutswe became spatially and materially evident. Social status and economic power derived from the ownership of cattle supplemented that which came from ownership of prestige goods such as bronze and copper, glass beads, and elite ceramics.

Relationships between groups of people, attachment to cultural groups, and rank within groups are often fluid on the African frontier (Kopytoff 1987); this was true in the African Iron Age as well (Kent 2002, A. Reid 2005, Sadr 1997, Stahl 2004, Thorp 1997). Wealth lay not only in material goods, but also in people and their labor (Guyer 1995). There was a necessity of those "in power" to gain allegiance through multiple strategies. Such strategies included diverse knowledge of crafts such as specialization in metallurgy, religious cosmologies, niche productive strategies in diverse ecological zones, and the offering of greater social or political status, such as through marriage alliances (Guyer and Belinga 1995; Huffman 1986a, 2009). These social reproductive goals should be apparent at the household level, as group or individual associations were materialized in house architecture and location, and in household items such as ceramics and beads. These social relationships and cultural knowledge were practiced in everyday activities (Miller and Tilley 1984). To quote Blanton (1995:107):

> Individuals, whether acting alone or in groups, strive to attain, and maintain, some acceptable level of social status (or social approval) in society; that is, they strive socially to reproduce themselves at what they regard as an acceptable level of social approval.

The exercise of power relations through coercion and consent through these social ties is known as hegemony (Gramcsi 1971, Emerson 1997:22). Hegemonic power operates as a cultural force, naturalizing hierarchy to a degree to which the dominant ideology is no longer considered ideological (Comaroff and Comaroff 1992:29). Top-down hegemonic power provides one perspective on the social and political processes operating in the Bosutswe region. As hegemony is a process, it also involves subaltern groups who may contest or renegotiate power (Pauketat 2001, Wesson 2008:6). Susan Sherratt (2010) observes that exploitation relates to perceptions about the involved relationships. Exploitation exists only if or after the periphery sees itself as having been taken advantage of. The periphery must accept or adopt the economic and cultural values of the center in order for exploitation to exist. These ideas can be applied to these top-down, hegemonic perspectives; perception of exploitation is key. However, if we only privilege elites and centers, we lose some of the most important aspects of how complex societies operated. Therefore, an alternative, bottom-up consideration is equally if not more important. A move towards a “regional-scale ‘negotiation’ of economy, society, and cultural identity” allows these smaller-scale settlements to have a more direct role in cultural construction and influence at these centers (Pauketat 2003:56).

Instead of describing power as coercive consent, a more accurate definition describes power as "the capacity for collective action" (S. McIntosh 1999). Defined as such, local relations are at the fore of polity dynamics. Satellite sites such as Khubu la Dintša impacted how Bosutswe operated at the margins of Mapungubwe and Great Zimbabwe. Long-distance trade may lead to global entanglements and urbanization but these external and core factors may have been less important than regional, autonomous dynamics (Brumfiel 1994, Calabrese 2005, Huffman 2010, Kusimba 2007, Stahl 2004, Thomas 1991). Although external factors provided opportunities for the rise of Bosutswe, neither they nor the elite were fully responsible.

Preipheral regions can be difficult to define, as people had the option to leave the area or create new alliances with another group (Kopytoff 1987). As much as social ties or political security drew people to an area, there was choice. Inequalities may have existed, but those relationships were not as entrenched as a top-down, hegemonic explanation may suggest. Indeed, these hinterland relationships may not have been as "subversive" as previously suggested. In the Bosutswe region, power was socially negotiated. Domination, or "power over" the hinterland, most likely did not exist. Rather, "power to” influence these regions through differential access to social networks and through the acquisition of status goods would have been a more likely course of action (Joyce et al. 2001, Kelly 2010:100, D. Miller 1989, Rowlands 1987).

HETERARCHY AND POWER STRUCTURES

Not all chiefdoms are hierarchical, and archaeological examples of heterarchy existing in Africa are numerous (Ehrenreich, Crumley, and Fox 1995, S. McIntosh 1999, Stahl 2004). Heterarchy is a horizontal, rather than vertical, arrangement of social structure, defined as "the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways" (Crumley 1995:3; see also Crumley 1987, 1994). Hierarchy and heterarchy are not mutually exclusive (Small 1995, Wailes 1995, Zagarell 1995) as political, economic, and social hierarchies are not necessarily integrated. A heterarchical perspective may aid in decoupling hierarchy and inequality from complexity as it allows a more holistic approach to questions of inequality (Brumfiel 1995, Paytner 1989). Heterachy allows us to consider how societal systems operate, that connection between peoples involves multiple groups interacting (Crumley 1995). These interactions, be it through contact between groups or with the aggregation of societies does not necessarily result in centralization of resources, their redistribution, or a loss of status or autonomy (R. McIntosh 1999). Early Iron Age Middle Niger societies provide an example of heterarchical societies (R. McIntosh 1993, 1998; S. McIntosh 1999; Stahl 2004). Processes of environmental change, increasing populations, and long-distance trade often lead to increasing centralization and hierarchical structures. Yet, Middle Niger societies resisted centralization, intensification, and public monuments. These societies were undoubtedly complex and yet lacked the above hallmarks of hierarchy typically associated with complex societies. Instead, different ethnic groups at neighboring sites specialized economically and relied on one another to mitigate climatic uncertainty, forming a truly heterarchical complex society (Magnavita and Magnavita 2001; R. McIntosh 1993, 1998). Long-distance trade, expanding populations, increasing numbers and sizes of sedentary settlements, and environmental limitation are all issues that the Bosutswe region experienced during the Early and Middle Lose periods. The degree of dependency and interrelationships between Bosutswe and its local region may have led to a more heterarchical, rather than hierarchical structuring of society. The following consideration of some of these neighboring communities and the local economy in the Bosutswe region speaks to such social and economic relationships.

Studies of heterarchy focus on the dialectic between power and authority, concentrating on the ways that status is established, normalized, and shared (Paynter 1989). Applying these principles to the study of the Bosutswe region opens up the possibility that some heterarchical organization may have existed and even more importantly refocuses on how power operated. The latter may prove particularly productive for explaining why the population at Khubu la Dintša was included into the elite Lose class (Chapter 9). In contrast, maintaining social boundaries between Lose and Toutswe communities was extremely important. Hierarchy existed at Bosutswe, but its extent and influence on a local and regional level remains in question. At Bosutswe, inequality was tightly controlled by elites through access to prestige trade goods and a set of elite ceramics. The Bosutswe Lose elite may also have had greater status than surrounding communities. On the other hand, rank may not have held the same significance outside the central settlement. There may have even been mixed communities of Toutswe-using people and Lose-using people if the prestige goods and other resources such as meat were more equally distributed at a site such as Khubu la Dintša. In this case, a more heterarchical model would be appropriate for describing the local landscape.

Blanton et al. (1996) provide a framework for power strategies that coexist to varying degrees in any political structure. These strategies are known as "corporate strategies" and "network strategies." Corporate power strategies consist of power sharing across different factions, although this is not a necessarily egalitarian distribution. Group-oriented social formation emphasizes "corporate solidarity of society as an integrated whole, based on a natural, fixed, immutable interdependence between subgroups and, in more complex societies, between rulers and subjects" (Blanton et al. 1996:6, cf. Lamberg-Karlovsky 1985). Network strategies, on the other hand, relate to political actors monopolizing resources (Blanton et al.. 1996:4-5). Control over access to goods by elites provides economic power and reinforces social hierarchies (Costin and Earle 1989). Differentiation is made within groups as well as to outsiders. However, network strategies may require partnerships with other communities to provide labor, security, prestige, and religious support (Guyer 1995, Guyer and Belinga 1995, Huffman 2000, J. Miller 1988, Robertshaw 1999). Family, clans, and kinship obligations can be complimentary or contradictory influences on these power strategies. These familial or clan relationships may provide stability by guaranteeing opportunities, or they may create instability through competition and rights over succession. They may both encourage the accumulation of wealth for those involved in its exclusive access, or they may restrict individualization by emphasizing redistribution among other members. Regardless of outcome, these relationships involve practice. Inclusionary tactics, such as the holding of feasts, gifting of cattle, and incorporation of outsiders into class affiliations, are one way to establish and secure status in society. Importantly, network and corporate strategies can be simultaneously present (Feinman et al. 2000). On the East African Swahili coast, for example, incorporations of both network and corporate strategies are found. Here, although status was established through access to Indian Ocean trade goods, it was balanced with corporate identity of Islam and an emphasis on public architecture that signified community (C. Kusimba 1999).

Network strategies are often tied to prestige goods economies. Control over the production, exchange, and consumption of valuable goods form the base of prestige goods economies (Blanton et al. 1996:5; Earle 1997, 2003; Ekholm 1972; cf. Appadurai

1986; Douglas 1967; Feil 1984; Frankenstein and Rowlands 1978; Friedman 1982; Friedman and Rowlands 1978; Peregrine 1991, 1992; Strathern 1979). The development of a prestige goods economy in the Bosutswe region can be seen during the Lose period. Bosutswe's position at the edge of the Kalahari Desert and its pre-existing trade connections with other communities across Botswana allowed it to control trade further into the African interior. As Bosutswe's role in this trade network grew, the influx of wealth associated with this foreign trade developed into a complex economic system in the Bosutswe region. This system involved the inhabitants of Bosutswe, the surrounding communities, and likely hunter-gatherer communities in the region (Chapter 4 and 12). The procurement of materials such as chert and wild game, commodities such as grain and livestock, and manufactured items such as iron tools and jewelry, ostrich eggshell beads, and ceramics sustained the local populace and provided items for local and regional trade. In return, Bosutswe perhaps gained staple goods such as salt and luxury goods such as specular hematite, copper, bronze, and glass beads.

Inequality may be diffused through a need to mitigate environmental uncertainty created by the strongest element of local wealth – wealth in cattle. As described in Chapter 4, cattle provided a lasting symbol of status that was recognized and valued by most groups in the Bosutswe region. Cattle require both reliable water sources and grazing grounds, and access to these resources may have translated from an economic opportunity to social and political opportunities through marriage and alliance. Interaction with the Indian Ocean network would have provided new, alternative routes to status apart from cattle through access to these networks and long-distance trade goods such as gold, glass beads, and cowry shells. Status items obtained from the Indian Ocean trade would have also allowed the Lose elite the increased ability to purchase cattle. Yet, through defining themselves through status in cattle – a network strategy (described below) – they would have also needed to procure adequate resources including water and grazing grounds. This would have been established through extending the Lose elite identity to neighboring commoner communities such as at Khubu la Dintša – an inclusionary strategy (described below). The population at Khubu la Dintša, in turn, would have been tied socially and politically as well as economically to the polity of Bosutswe, deeply invested in its participation in regional trade. Economic dependency between Khubu la Dintša and Bosutswe may have established intersite inequality but also relative equality at the intrasite level. Inclusionary network strategies likely developed in the Bosutswe region during the Lose period as Bosutswe became increasingly intertwined with regional trade. However, this may have impacted the ways in which - and the extent to which – inequality formed in the region.

The upcoming chapters provide a new perspective on the complex society of Bosutswe, the emerging inequality related to the Lose elite, and how power was appropriated, shared, and contested. Power operates on a number of scales: within households, between households, between elite and non-elite, within regions, and between regions (Halperin and Foias 2010). This dissertation concentrates primarily on one of these scales – within regions – but also considers relationships between elites and non-elites in the broader region of southern Africa. In the local region of Bosutswe, relationships between diverse communities and polities were undoubtedly complex and constantly renegotiated. Our understanding of Bosutswe, because it is not securely contextualized in its locale, cannot presently address the dynamics of social phenomena. That lack of data potentially distorts the factors that underlie social change (Fabian 1983). Contradictory groups and multiple identities fit into, protest, reproduce, and inevitably structure society through systems such as kinship or gender or ethnic affiliations

(Sassaman 2000). How these affiliations manifested in the Bosutswe region remains unknown, but they likely involved the exchange of cattle and other prestige goods.

Connections with the non-elite communities at and around Bosutswe were integral for the success and survival of the polity. These connections were opportunities for neighboring communities, consistently renewed and renegotiated as regional dynamics and their secondary and tertiary consequences impacted the Bosutswe region. Long term sedentary settlements – such as Bosutswe – in marginal environments – such as the Kalahari Desert – deal extensively with permanent water sources, arable land, the health of soils, vegetation suitable for grazing, and pests and disease (Chapter 4). Disappearance of wild herds due to overhunting and the increased reliance on domesticates for food places further importance on these connections. Expansion of farming and grazing lands to maintain sufficient resources for a growing population required both settlements and tenants. If regional instability created an atmosphere of conflict, these communities and the hinterland may have provided temporary shelter for fleeing elite, and new alliances may have ensued.

In conclusion, power strategies can and should accommodate elites and polity centers as well as local, less powerful hinterland sites and people. Refuting core dominance does not necessarily mean rejection of unequal exchange and dependency. Indeed, understanding what is exchanged and why it is exchanged should structure how complexity and inequality are discussed. Considering the social dimension to these economic relationships is equally necessary; these are human relationships grounded in marriage and kinship, jealousy, self-interest, and competition, as well as cooperation. By focusing on local social and economic power relationships, I hope to argue that complexity is not always driven by external factors, elites, or the core, but also may arise from local actors and out of localized contexts.

Chapter Three: Regional Overview

The Middle and Late Iron Age in southern Africa (900-1840 AD) saw the increasing participation of small-scale agro-pastoral communities in extra-local long-distance exchange that ultimately linked them to Indo-Asian trade systems that include the Middle East, India, China, Madagascar, and Indonesia (Huffman 2007, 2010; Vogel et al. 1993, 1998). Regional centers and states such as Schroda, K2, and Mapungubwe in South Africa; Taukome, Toutswemogala, Lose, and Bosutswe in Botswana; and Great Zimbabwe and Khami in Zimbabwe; provide well-known nodal links between the coast and interior (Denbow 1982, 1983, 1986, 1990, 1999; Denbow and Miller 2007; Denbow et al. 2008; Eloff and Meyer 1981; Fouché 1937; Gardner 1963; Garlake 1973; Huffman 1982, 1984a, 1986a, 1986b, 2007, 2009, 2010; Meyer 1980, 1997, 1998; Mitchell 2005; Wilmsen et al. 2009; Wood 2005, 2010). Although inequality existed in southern Africa before this period, marked by differential ownership of cattle (Huffman 2010, cf. Kim and Kusimba 2008), it is between the 10th and 13th centuries that chiefdoms and states emerge. The rise of social complexity in southern Africa involved the influx of goods and increases in local production associated with the long-distance Indian Ocean trade. With these trade items came a shift towards a prestige goods economy. Status was no longer based primarily on cattle, as these foreign luxury goods became another form of prestige that supplemented the traditional mediums for status. These new goods become an opportunity to a nascent elite to control their redistribution. Individual wealth and class differences became possible to a greater degree and materially distinguished. In this chapter, an overview of the Indian Ocean trade, the time period describing the emergence of complex societies in southern Africa, and the changes those sites experienced are discussed.

INDIAN OCEAN TRADE

The meeting of Indian Ocean air with the landmasses of south Asia, southern Arabia, and eastern Africa brings monsoon seasons that reverse the wind and currents in the winter and summer seasons. This reversal allows for boats to travel back and forth from India to southeast Asia every six months, and from India to the east coast of Africa in the matter of a few weeks. Double-ended dhows and square-rigged boats, bound together with coconut fiber, made these journeys to and from east and southern Africa in what is now known as the Indian Ocean trade network (Mitchell 2005; Figure 3.1). Arabic, Chinese, and Islamic sources suggest that African participation in the Indian Ocean exchange began by the mid-8th century AD (Horton and Middleton 2000). These African trade ports were populated by native Africans, neither established nor colonized by Arab merchants (C. Kusimba 1999).

Trade did not spring up in the Iron Age without precedence. Archaeological evidence shows that by 2500 BC, Zanzibar traded fish and other ocean resources (Chami 1994). Indonesia colonized Madagascar by the 1st millennium AD, perhaps earlier (Mitchell 2005). The *Periplus of the Erythraean Sea* suggests Greco-Roman trade with an African port called Rhapta, likely in Tanzania, which exported ivory, rhino horn, and turtle shell in exchange for iron tools, wine, grain, and glass stones (Mitchell 2005). Late Roman pottery has also been found at Zanzibar (Horton and Middleton 2000). Pre-Islamic trade ceramics from the 7th or 8th century have been found at Chibuene in Mozambique (Sinclair 1982).

Some of the earliest indicators of Indian Ocean trade come in the form of glass beads from the Middle East beginning in the 7th and 8th centuries (Wood 2000, 2005, 2010, 2011, 2012). These glass beads are found in the Bosutswe region by the 9th century AD indicating trade networks far into the interior (Robertshaw et al. 2010, Wood 2011; Chapter 8). By the early 10th century, there was the exportation of ivory to India and, indirectly, China (Freeman-Grenville 1962; Sinclair 1982, 1987). Gold became a major export by the 13th century AD, though some historical sources, such as al-Masudi, suggest an earlier presence (Huffman 2007:75).

Southern African involvement in the Indian Ocean trade depended partly on the oscillating centers of trade in Africa further to the north. When Mogadishu (Somalia) was replaced by Kilwa (Tanzania) as the major east African trade port in the 12th century, trade with southern Africa increased significantly. Kilwa was positioned near a major turning point in the ocean currents; coastal networks from the Middle East and south Asia began a year-long journey here to the southern African port towns of Sofala and Chibuene in Mozambique (Wood 2005, 2010, 2011). Sofala and Chibuene are examples of two known southern African ports for trade into the interior, which would have, in turn, been linked to the Bosutswe region. Gold production from the south supported Kilwa, shown by Huffman's discovery of a copper coin at Great Zimbabwe minted with the name of Kilwa's sultan al-Hasan ibn Sulaiman (Huffman 2007:76, 1972). Kilwa remained important through the 14th century in part due to these southern trade connections.

Trade goods from southern Africa included ivory, gold, rhino horn, skins, and iron (Huffman 2007). Copper and tin were also exploited to create copper and bronze beads and jewelry objects (Huffman 2007:85-89). These were taxed in Kilwa, and traded for glass beads, cloth, and glazed ceramics. Glass beads indicate a second trade route from the 11th-12th century AD that connected southern Africa directly to southeast Asia (Huffman 2010; Robertshaw et al. 2010; Trimingham 1975; Wood 2005, 2010, 2011). Al-Masudi mentions gold coming from Sofala in Mozambique in 10th century AD (Sinclair 1982). By the 13th century, gold was a major export along with ivory, iron, and possibly slaves (Denbow in conversation 2010, Horton and Middleton 2000). The expansion of trade that occurred across the African coast was related to the establishment of African kingdoms, states, and class-based hierarchies throughout east and southern Africa, including in the Bosutswe region (Chapter 4). The 14th and 15th centuries AD were the golden age of trade along the Swahili coasts. The collapse of Great Zimbabwe around 1450 AD began the decline of southern African involvement in the Indian Ocean trade network. The gradual decline of the Bosutswe region correlates to this shifts in regional trade (Chapter 4). Portuguese exploration in the early 16th century AD accelerated this decline. Forceful Portuguese involvement altered trade networks and irrevocably changed the nature of Indian Ocean trade (C. Kusimba 2007).

THE SOUTHERN AFRICAN INTERIOR

A long history of ceramic traditions and chronology traces cultural interactions, migrations, and the evolution of complex societies during the southern African Iron Age. It is during this period that major polities develop in southern Africa (Figure 3.2). Three phases generalize this period: the early agro-pastoral Central Cattle Pattern settlements during the last half of the 1st millennium AD, the emergence of major polities and increasing inequality from 1000-1300 AD, and increasing inequality and new settlement patterns post-1300 AD.

Early agro-pastoral settlements (1st Millennium AD) and the Central Cattle Pattern

Agro-pastoralists established semi-permanent and, later, permanent settlements in the region during the 1st millennium AD. The centrality of cattle to these communities – important economically, politically, and spiritually – set the foundation for the local economy in the Bosutswe region (Kuper 1980, 1982b; Thorp 1995).

The Bambata culture, known for their ceramics, stone tools, and mixed hunting and herding economy, appeared in the region between the 1st and 4th centuries AD (Denbow 1984; Denbow and Campbell 1980; Huffman 1989, 1994, 2005, 2007; Reid et al. 1998; Robbins et al. 2005; Walker 1983). Bantu-speaking agro-pastoralists were present in southern Africa by the 4th century AD, cultivating sorghum and millet in this comparatively warmer, wetter period (Holmgren et al. 1999, Huffman 2007, Mitchell 2002, Tyson and Lindesay 1992). The Zhizo/Taukome culture is present in Botswana by 650 AD (Denbow 1984, Kiyaga-Mulinwa 1990, Segobye 1994). By 900 AD it had spread across southwestern Zimbabwe and the Limpopo Valley in South Africa (Campbell et al. 1996; Denbow 1982; Garlake 1966, 1967; Hanisch 1980; Huffman 1972, 1973, 1984a, 2007; Kiyaga-Mulindwa 1992; Robinson 1960, 1966). Zhizo and Taukome are two variations of the same group, depending on whether they were settled in eastern Botswana and the Makgadikgadi (Taukome) or Zimbabwe and South Africa (Zhizo). Glass beads found at Zhizo/Taukome sites such as Taukome, Schroda and Kaitsaa in Botswana made the Zhizo culture the first in the interior to have Indian Ocean trade connections. This trade likely involved ivory from Zimbabwe and South Africa, salt from Botswana, and possibly iron from the Tswapong Hills in Botswana (Burke 1962, Campbell, Steyn, Huffman, and Main, field notes 1996, Freeman-Grenville 1962, Huffman 2007, Kiyaga-Mulindwa 1992, Main 1996).

These communities lived in semi-permanent villages according to a settlement pattern known as the Central Cattle Pattern (CCP) (Denbow 1986; Huffman 1981, 1982, 1984a, 1986a, 2001, 2007, 2010; Kuper 1980; Mitchell 2002; Mitchell & Whitelaw 2005). The CCP is an eastern Bantu, patrilineal settlement pattern associated with many archaeological sites in the region, including the earlier levels of Bosutswe (Chapter 4) and Mmadipudi Hill (Chapter 9) (Denbow 1999, Denbow et al. 2008Huffman 2010). The worldview associated with the CCP includes bridewealth in cattle, male hereditary leadership, and the idea that ancestors play an active role in everyday life. The CCP is oriented around a central kraal (where male burials take place), with a male domain nearby, a smithing area, and assembly area for men. Surrounding these central specialized areas is an outer zone for women and households. Ethnographic models suggest that the house of the senior wife was opposite the entrance to the settlement (Lane 1998:183). Ideologically, right represented male space, and left female space, up with senior and down with junior (Huffman 2007). Following Kuper (1982a), Huffman argues that social ranking is based on kinship relations to the chief and the length of stay in the chiefdom. These agricultural centers probably grew sorghum, *Pennisetum* millet, and cowpeas and other legumes yet to be recovered. Domesticated animals such as goats, sheep, and cattle became an increasingly important part of the economy.

Cattle were not only a source of food for southern African Iron Age settlements, but, as indicated by their primacy in the settlement organization, played a crucial role in society as well. Cattle were related to group identity, individual status, leadership, association with ancestors, and many aspects of social life such as fertility. Ethnographies of cattle-based economies express the centrality of cattle to all stages of life events, from the initiation of adulthood to, most famously, bridewealth. One's status is quantified in the number of cattle, wives, and children; the latter two require the ownership of cattle as well (Kuper 1982b). Cattle are loaned and given through marriages in order to make and maintain alliances (Calabrese 2005:65-66, Krige 1965 [1936], Krige and Krige 1980 [1943], Kuper 1982b). Thus, higher status sites have more cattle and younger cattle (signifying tribute) than other sites (Thorp 1984, 1995). The central location of the kraal in these settlements is just one of these indicators of the importance that cattle had in Central Cattle Pattern sites.

South African polities and the rise of social inequality (1000-1300 AD)

Around 1000 AD, major changes in the economy, social and political structure, and worldview occurred. It is during this period that this region became more intensely involved in the Indian Ocean trade network. Additionally, inequality became more apparent in the region.

A new group known as the Leopard's Kopje people, drawn to the expanding Indian Ocean trade, moved north in South Africa and replaced Zhizo peoples in the Limpopo Valley. Associated with these Leopard's Kopje peoples are the South African polities of K2 and its successor, Mapungubwe. These polities gained wealth and prominence due to their participation in the Indian Ocean long-distance trade and monopoly over exotic objects. Huffman (2009) emphasizes that internal dynamics, including the ownership of cattle and hereditary leadership, predates long-distance trade and provides the foundation and societal norms through which the opportunities that external trade allows developed (Huffman 2009:45, 2010). Estimates for settlement size, settlement hierarchy, overall population, and extent of territory are based on Huffman's (1986a) estimations made from historical Zulu analogies (Huffman 2009, 2010).

K2 was the largest of the early Leopard's Kopje settlements, occupied between 1000 and 1220 AD. Based on its large kraal and midden, it was the highest political center in the region (Huffman 1986a, 1986b, 2007, 2010). Two kraals, each over thirty meters in diameter and six meters in height, were located at the settlement. K2 controlled the Indian Ocean trade into the interior, as noted by high concentrations of both ivory and glass beads (Voigt 1983). Garden roller beads, made from crushing and molding Indian Ocean glass beads into larger, multi-colored beads, were a product of K2 (see Chapter 10). These beads serve both as an indicator of K2's control over the long-distance trade and its connections into the interior. These K2 garden roller beads are found at sites such as Bosutswe (Wood 2005, 2010), Mmadipudi Hill (Chapter 10; Wood 2011 for a more complete list), and Kaitshaa in the Makgadikgadi (Main, Campbell, and Huffman, field notes 1996; Denbow forthcoming), where a broken garden rolled bead mold was also found (Denbow in conversation 2013).

Around 1220 AD, the settlement at K2 shifts to another naturally fortified hilltop one kilometer to its northeast, Mapungubwe (1220-1280/1300 AD) (Figure 3.3). The population at Mapungubwe expanded to 5,000 people at the site and controlled 30,000 km^2 in territory (Denbow 1991; Garlake 1968; Huffman 2000, 2007, 2009, 2010; Loubser 1991; Robinson 1958). This shift to Mapungubwe marked a major change in settlement organization: the kraal was no longer located in the center of the village. This shift accompanied spatial segregation of elites to hilltops not accessible to commoners, restricted ownership of cattle, and provided a central court for the common people. A stone-walled palace was built at center of the hilltop by 1250 AD (Fouché 1937, Gardner 1963, Huffman 1996a). Scholars believe this hilltop served as both the leader's residence and a ritual rainmaking hill, thereby marking the agglomeration of political and religious associations in one (Murimbika 2006, Schoeman 2006).

Generations of archaeologists have documented finds at K2 and Mapungubwe (Dart 1959; Du Piesanie 2008; Eloff and Meyer 1981; Fouché 1937; Gardner 1955, 1956, 1958, 1963; Galloway 1937; Hennenberg and Steyn 1994, 1995; Meyer 1980, 1997, 1998; Murimbika 2006; Saitowitz 1996; Schofield 1937; 1994, 1995; Steyn and Hennenberg 1994, 1995a, 1995b, 1996, 1997; Voigt 1983; Walton 1956a and 1956b). The scale of these finds is stunning: 15,859 glass beads at K2, 104,164 glass beads from Mapungubwe Hill and 3,933 from the nearby Southern Terrace (Saitowitz 1996); Chinese celadon from the Sung Dynasty (Jones 1937) and cowries and other marine shells (Gardner 1963, Jones 1937, Plug 2000, Voigt 1983); at least 200oz of gold (Garner 1962, Voigt 1983); and ivory artifacts (Huffman 2007). Finds of iron and copper provide evidence for metal production at both K2 and Mapungubwe (Jones 1938, Gardner 1963). Spindle whorls found at Mapungubwe, among the earliest in southern Africa, indicate that cloth was woven for local use or export (Huffman 1971, van Waarden 1998). Derivatives of Mapungubwe ceramics, called Lose-style ceramics, are found to the northwest in Botswana, where they are associated with emerging elite (Chapters 2, 4, 7, and 9). A similar situation of local development and admixture with Mapungubwe styles has been found in the Soutpansberg region of South Africa (Denbow in conversation 2013, Loubser 1988).

Mapungubwe was abandoned around 1280-1300 AD, and was succeeded by Great Zimbabwe. Its collapse is debated; climate change, a multi-year drought, agricultural competitors, and shifts in the Indian Ocean trade of southern African gold northwards to Zimbabwe gold fields have been posited as reasons for its abandonment (Huffman 2010, J. Smith 2005). Interestingly, Mapungubwe ceramics continue to be found elsewhere, at Mapela Hill in southwest Zimbabwe and Soutpansberg Mountain to the south (Calabrese 2005; cf. Garlake 1968; cf. Loubser 1988, 1989, 1990), and through echoes in Lose ceramic assemblages (Chapter 4).

At the same time in Botswana, an organic transition from Taukome to Toutswe occurred (Denbow 1981, 1983; Segobye 1994). In contrast to the Leopard Kopje wealth, based on from the Indian Ocean trade, the Toutswe capital of Toutswemogala gained its power through increased wealth in cattle (Denbow 1982, 1983, 1986; Lepionka 1978, 1979; Schofield 1948). Over one meter of cultural deposit was preserved at the site. Giant midden deposits with vitrified cow dung were located in the center of these settlements, indicating its political and economic importance as well as its adherence to the CCP. As the site gained status over time, cattle constituted an increasing proportion of the faunal assemblage (Denbow 1983, 1990; Segobye 1998; Welbourne 1975). Glass and shell beads were also found at the site (Denbow 1986, Segobye 1994).

The people of the Zhizo/Taukome, Leopard's Kopje, and Toutswe traditions interacted regularly, in peaceful and, at times, hostile ways (Calabrese 2000, 2005; Denbow 1982, 1983, 1986, 1990, 1999; Denbow and Wilmsen 1986; Huffman 1978, 1986a, 1996a; Wilmsen 1989). Other trade connections to the Eiland culture to the east and south (1000-1300 AD) are also found (Aukema 1989, Denbow 1981, Huffman 2007:391; Chapter 9). Calabrese (2000, 2005) looks at the Zhizo and Leopard's Kopje interactions in particular, believing that they co-occurred at K2. He argues that a ceramic style local to the Shashe-Limpopo basin, Leokwe, is a product of these interactions (Calabrese 2000, 2005; Huffman 2007, 2009, 2010). Contact between Toutswe peoples and K2 are evident in ceramics of the other's culture found at the corresponding site (Denbow 1982, Fouché 1937). These ceramics may indicate marriage transactions, as pots from the bride's homeland are common for marriage exchanges as they represent the bride's fertility (Aschwander 1982, Denbow 1983, Evers and Hammond-Tooke 1986, Hammond-Tooke 1986, Huffman 2010). Interaction would not have been limited between Bantu-speaking populations, and contact with hunter-gatherers likely occurred

(Chapter 4 and 12). In the middle Boteti, for example, Khoe ceramics are found alongside stone tools and cattle remains.

Increasing inequality and the Zimbabwe Cultural Pattern (post 1300 AD)

After the 13th century, a shift in trade routes to include gold from southern Africa resulted in an increase in trade and a chain reaction in the ways people organize themselves throughout the region (Calabrese 2005, Denbow 1999, Huffman 2010). Associated with these changes were a switch in settlement patterns (discussed later in this chapter; Huffman 1996a), and, as Denbow postulated, a devaluation in the status of cattle as the manifestation of political importance (Denbow 1999).

The building of stone walls around 1300 AD denoted Great Zimbabwe's ascension to power (Figure 3.4). Although earlier settlements at the site existed, these are sharply contrasted by this sudden population increase and increase in wealth (Huffman 2007, 2008, 2009, 2010; Robinson 1961; Huffman and Vogel 1991; Summers 1961; Whitty 1961). The rise of Great Zimbabwe signaled a shift in the center for gold mining from the Shashe-Limpopo region northwards to the gold fields of Zimbabwe. The stone-walled center of Great Zimbabwe controlled these gold sources. Great Zimbabwe was the largest of the Iron Age polities at 18,000 people at the main site and 90,000km^2 of territory that extends all the way to the Makgadikgadi Pans (Denbow 1985, 1990; Huffman 2007, 2010; Main 1992-1994). Long-distance trade associated with Great Zimbabwe indicated a shift away from ivory, rhino horns, and skins as primary products to an increased interest in gold and copper. Prestige goods found at Great Zimbabwe include gold, ivory, glass beads, copper ingots, and ceremonial gongs from the Congo Basin (van Waarden 1998).

Great Zimbabwe is known for its class distinction and sacred leadership, manifested in the Zimbabwe Cultural Pattern. Its stone-walled palaces were the political and ritual center for the larger settlement areas; sacred leadership was indicated by symbolic prestige walling, monoliths and curved stone entrances, and carved soapstone birds on stone pillars (Huffman 2007:393-407, van Waarden 1998:124-8, Huffman 1996a for extensive discussion). According to oral traditions and historic records the leader was ritually secluded in a stone palace, surrounded by elite housing. Commoners lived to the west, and mostly outside the perimeter wall of the site. Cattle consumption was associated with the elite, with the king and royal family consuming 90-100% cattle for their meat (Brain 1974, Thorp 1995, van Waarden 1998).

A major shift from the Central Cattle Pattern to the Zimbabwe Cultural Pattern (ZCP) is associated with the rise of inequality at K2 and Mapungubwe but crystallized at Great Zimbabwe, after which this settlement pattern is named. This shift involved: 1) no longer keeping cattle, goats, and sheep in a central kraal; 2) separate elite housing, sometimes accompanied by prestige stone walling that was also symbolic; and 3) the combination of political and religious leaders as spiritual “rainmakers" (Huffman 1996a for full discussion).

After the collapse of Great Zimbabwe, Khami (1420/1450-1820 AD) controlled trade of gold, copper, salt, and tin in the regional and long-distance trade (Huffman 2007, 2011; van Waarden 1998; Wieschhoff 1941:65-68). Stone walls indicate a cultural continuum between Great Zimbabwe and Khami (Huffman 1996a, 2007:411-412). Khami’s occupation continued through European contact and the historic period. In 1644 AD, Portugal aided a civil war between two brothers for succession at Khami (Beach 1980, Garlake 1968, Huffman 2007, van Waarden 1998). The Hill Ruin at Khami was burned and abandoned. Alliances with and attacks from the Portuguese signaled a larger devolution of the Indian Ocean trade network in Africa. Further disruption due to the warfare and chaos of the *difaqane* in the early 19th century effectively ended this period, as migrations of tribes moved and escaped to new territories as the Zulu and Ndebele states expanded (Huffman 2007, Lane and Segobye 1998).

The rise of complex societies in southern Africa: Huffman, Hall, and Calabrese

Calabrese (2005:42) identifies two models of the rise of complexity in the southern African Iron Age. The first, advocated by Huffman (1982, 1984b, 1986a, 1986b, 1986c, 1996a, 2000), uses ethnographic analogy to argue that traditional wealth limited the size and degree to which a settlement can become complex. These types of traditional wealth, as described above, include cattle as well as obligations of chiefly succession and alliances. Long-distance trade was crucial to develop social and political classes. Political power and the rise of inequality stemmed from control over the wealth resulting from long-distance trade. A slightly different interpretation from Martin Hall (1987) stresses the difference in nature of these two types of status goods. Hall agreed with Huffman that a shift from wealth in cattle to wealth in long-distance trade items defined social complexity. However, he emphasizes the limited availability of these finite resources made them significantly different from cattle, in that their "value [lay] in their rarity rather than their potential for increase" (Hall 1987:89). For Hall, long-distance prestige goods became part of a new symbolic status system where fealty and tribute took part. Calabrese (2005) notes the absence of social dimensions in either of these models. He suggests:

> Cattle, the primary traditional form of wealth, derived a great deal of their importance in exchange systems from the identification with ancestral and lineal fertility (e.g. Kuper 1982b). Social power furthermore, is derived from genetic distance, real or fictive, to an apical ancestor. This distance also presumably serves to some degree as the basis for political power. Status, class, and leadership

> thus do not derive from possession of or control over exotic wealth items; rather, wealth items are used as criteria for signaling membership and identity and in building and maintaining horizontal and vertical relationships of dependency, superiority, and subordination. Further, it should also be noted that undertaking long-distance trade is costly, risky, dangerous, and requires the prior ability to appropriate surplus social production (Renfrew 1986, Hastorf 1990) (Calabrese 2005: 43).

Individual wealth was derived from access, control, and ownership of long-distance trade goods from the Indian Ocean trade network. These goods were valued as signifiers of status – the core of a prestige goods economy (Calabrese 2005, Earle 1997, Ekholm 1972; Chapter 2). The luxury trade goods network include Indian Ocean glass beads coming from the Middle East and South Asia that were traded widely through the region, Chinese celadon and porcelain, and cowries and other marine shells (Huffman 1982, 1984b, 1986a and b, 1989, 1996, 2000, 2007; Jones 1937, 1964; Plug 2000; Voigt 1983; Chapters 7 and 8). Status items were not limited to foreign goods. As in earlier tradition, cattle continued to be an important part of symbolizing status. Ceramics remained an important ethnic and/or status marker (Calabrese 2005:50-51). Other objects made of ivory and metals including iron, copper, bronze, and gold, had strong associations with status and with elites (Calabrese 2000, 2005; Denbow and Miller 2007; Denbow et al. 2008; Jones 1937; Gardner 1963; Voigt 1983; Chapters 4, 7, and 9). Some African elites were buried with metalworking tools (de Maret 1985), a testimony to the connection between metallurgy and leadership (Calabrese 2005:62; de Maret 1985, 1994; Herbert 1984, 1993, 1996; Sassoon 1983). Distribution of iron and copper and metal tools was tightly controlled during and after the K2 and Mapungubwe periods (Calabrese 2005). These metal tools include hoes, arrowheads, spearheads, awls, punches, chisels and other objects associated with craft production. Control over metal tools is one of the hallmark indicators of the rise of the Lose elite at Bosutswe, discussed in the next chapter.

Chapter Four: The Environment and History of the Bosutswe Region

The Bosutswe region is located at the eastern edge of the Kalahari Desert at the meeting of sandveld and hardveld ecoregions (Figures 4.1 and 4.2). The area's geography was hospitable for sedentary agropastoral settlements such as Bosutswe, who raised cattle, goats, and sheep as well as sorghum, millet, and cowpeas. These activities would not have been without environmental constraints, and issues such as scarcity of water, access to grazing grounds, pests and disease, and land degradation would have influenced economic strategies. Hinterland sites may have played an important role in providing dispersed grazing grounds and agricultural fields to support the growing population at Bosutswe beginning in the 13^{th} century AD, an empirical question addressed in this thesis.

Increased involvement in the Indian Ocean network correlated with the emergence of stratification at Bosutswe and in the wider region (Chapter 3; Denbow 2002, Denbow and Miller 2007, Denbow et al. 2008; Huffman 1986, 2000, 2007, 2009). Scholars have debated heavily over the causal factors of this expanding social inequality; these arguments have included climatic drought during the "Little Ice Age," economic restructuring to control inter-site trade, development of new strategies to combat environmental degradation around sedentary settlements, and political-religious power restructuring and changing "worldviews" resulting from elite households shifting their basis of authority from cattle-based wealth to introduced luxury items (Calabrese 2005; Denbow 2002; Denbow and Miller 2007; Denbow et al. 2008; Holmgren et al. 1999; Huffman 1986, 1996, 2000, 2007, 2009; J. Smith 2005; Tyson and Lindesay 1992). Whatever combination evolved, societal restructuring at Bosutswe resulted in the emergence of an elite class known as Lose who controlled long-distance trade. The Lose elite differentiated themselves from commoners at the site through the spatial separation of elite houses, activity areas for iron smithing and bead making, and through display of individual prestige in the form of elite ceramics and jewelry. This period is known as the Early and Middle Lose periods (1200-1300 AD and 1300-1450 AD), and corresponds to Mapungubwe and Great Zimbabwe's dominance in the regional trade.

Two hinterland sites in the Bosutswe region, Khubu la Dintša and Mmadipudi Hill, are introduced below. Khubu la Dintša is located twelve kilometers northwest of Bosutswe, and Mmadipudi Hill three kilometers west of Bosutswe. As the date of Khubu la Dintša fits into this crucial time period, excavations shed light on these changes and how social relations within and between sites were negotiated. The rise of Bosutswe was at least in part contingent on local power dynamics in the Bosutswe reigon, potentially more important for the everyday operational aspects of Bosutswe's development than external factors such as long-distance trade and regional power struggles.

Geology and Environment

The hilltop of Bosutswe sits astride a major geological divide: the Kalahari sandveld dominates to the north and west of it, and hardveld to its south and east (Denbow et al. 2007, Green 1966). The headwaters of the Motloutse River begin at the southeast corner of the hill. The river cuts into hundreds of meters of Kalahari beds, exposing sandstones, mudstones, silcretes, and calcretes (Denbow et al. 2007, Machacha et al. 1985). Erosion that occurred during the Tertiary Period left hilltops of limestone and chert-capped silcretes on top of basalt uplifts. The uniqueness of this geology creates an aquifer where rainwater is caught in the silcrete layer. The underlying basalt serves as an impervious layer, creating a high water table. Modern wells can tap into this aquifer within two to four meters of digging. Prehistoric water resources may have included dolorite dykes, which cut into the impervious basalt, creating basins and springs. Denbow et al. (2007:462) report one of these springs about 25 kilometers east of the Bosutswe hilltop. The hardveld is often composed of "black cotton" soils that cover the basalt bedrock. Although fertile, "black cotton" soils drain poorly and therefore have a tendency to flood in the rainy season. Mopane scrub dominates the vegetation. Mixed in with the "black cotton" soil are lighter alluvial soils covered by brushy thickets of acacia. These thickets are home to a plethora of wildlife: game such as ostrich, khudu, duiker, and hyena; and poultry such as guinea fowl and corribuster. To the north and west, the Kalahari sands are dominated by grass species intermixed with trees and scrub. The fauna here is similar to the alluvial areas, although more springbok and zebra are present. The difference between hardveld thickets and sandy grasslands translates into geochemical signatures used in archaeology (Smith 2005).

In her dissertation at the University of Witwatersrand, Jeanette Smith (2005) provides an excellent ethnoarchaeological account of herding practices in the Shashe-Limpopo Basin, the location of the polities of K2 and Mapungubwe. Although 300km south and east of Bosutswe, these descriptions serve to illustrate the dynamics and decision making involved in agropastoral societies in the region (Figure 4.3). Paraphrased (J. Smith 175-9, 187):

> Herds usually consist of *Bos taurus* (cattle), *Capra hircus* (goats), and *Ovis aries* (sheep). Sheep are the least common of the three, and some herds only have goats and sheep. Mixed herds maintain grasslands that are prone to natural or manmade bush fires. These fires serve as one of the main deterrents of bush encroachment. Modern herding occurs in mopane scrubland and acacia grasses. Agropastoralists graze herds in different ecological zones to take advantage of seasonality and associated variations in water and vegetation. This range can extend up to 100 km during drought. In the Shashe-Limpopo River Basin, the herds move from the floodplains to upland mopane grasslands. During the wet season, livestock range up to 20km a day and then are brought back to the kraals in the evening. During the dry season, they are kept close to the posts or villages to browse and feed on

> stalks from harvested fields and riverine or wetland vegetation. To keep livestock from grazing in farm fields, animals are kept at “posts" 10-50km from the villages. It appears that practices were similar in the Iron Age. Faunal remains at K2 and Mapungubwe suggest livestock were seasonally drawn from outside the river basin as crop production increased and local pastureland decreased. Sustained C_4 diet, even in seasons of grazing, suggests part of the seasonal management system included grazing on harvested sorghum and millet stubble.

Agropastoralism played a strong part in the emergence of complex societies in the Bosutswe region. Early research suggested that small-scale subsistence farming (Huffman 1986b, Meyer 1998, Voigt 1983; J. Smith 2005 for summary) would have been susceptible and indeed subject to climate change and environmental degradation. Climate change was believed to be a driving force behind the rise and subsequent fall of many Iron Age settlements, particularly Mapungubwe (Holmgren et al. 1999, Huffman 1996b, Lee-Thorp et al. 2001). Researchers correlated large-scale climatic events such as the “Medieval Warm Epoch” (900-1300 AD) and the "Little Ice Age" (1300-1850 AD) with the trajectory of complex societies. A warmer, wetter phase in South Africa culminating around 1200-1250 AD was believed to contribute to the rise of Mapungubwe; the Little Ice Age brought a cooler, drier climate to the region by 1415 AD and continued through the 18th century, which was believed to be related to Great Zimbabwe's collapse and general regional decline. These climatic connections oversimplified these coarse correlations and overlooked finer, regional scales of climate and environment (Denbow et al. 2008, Mosothwane 2010, J. Smith 2005). Regional politics and the economic impact of oscillations in the Indian Ocean trade routes were one of multiple social and economic factors that impacted regional dynamics. Although environment did play a role in how these societies developed, societal resilience to ecosystem variability was commonplace through regional economic diversity and exchange. These strategies helped mitigate environmental impacts such as the unpredictability in rainfall (Huffman 2000, A. Rosen 2007, J. Smith and S. Hall 1999). Responses to climatic variations involved human agency and choice; indigenous knowledge would have been shaped by the local environmental characteristics. For example, drought affects species of plants and animals differentially. Iron Age societies countered this problem by diversifying plant and animal resources to prevent degradation and starvation (J. Smith 2005).

The frequency of land degradation in Iron Age southern Africa has also been a subject of intense debate. Iron Age hallmarks of long-term sedentism, population aggregation and expansion, and economies based on domesticated plants and animals undoubtedly altered the semi-arid scrub desert. Land degradation is the result of one or a series of processes that reduce the production potential of land resources (Hellden 1991:392, J. Smith 2005:37, Swift 1996:82). In southern Africa, classic indicators of land degradation include the interlinked characteristics of scrub encroachment, decreased plant diversity, soil salination, and decreased crop yields (Hoffman and Ashwell 2001, Smith 2005, Verstraete and Schwartz 1991). Even after scrub land was cleared for cultivation, soil degradation may have led to scrub encroachment (J. Smith 2005:68). Following Beinart (1996), Dahlberg (1996), Mortimore (1998), and Archer (2002), Jeannette Smith (2005) presents two basic explanations for the causal factors of land degradation. The conventional view assumes that land degradation results from inappropriate (i.e. unsustainable) farming methods. These farming methods would be responsible for soil erosion, overgrazing, and deforestation. Common solutions include strip cultivation, planting trees, decreasing herd sizes, and leaving land fallow. An alternative view interprets land degradation as a response to a range of environmental impacts that were either naturally or culturally induced. Although land may be unsuitable for some management strategies, practices can be adapted to suit the land.

Sedentism also influenced strategies of agropastoralism. Access to water and the quantity of vegetation and suitable plant types for sustaining herds limited the location and extent of grazing grounds. Gifford-Gonzales (2000) adds that African pests and diseases would have impacted the health and spread of herds. These would have included trypanosomiasis, malignant catarrhal fever, African Coat Fever, Foot-and-Mouth Disease, and tsetse flies. Although their impact in the Iron Age is unknown in the Bosutswe region, these pests and diseases were prevalent at the polities of K2 and Mapungubwe and Great Zimbabwe (J. Smith 2005:67-8). Strategies to mitigate their impacts would have included moving herds out of areas infected with pests during wet periods and intentional, periodic burns to manage habitat of these pests. These fires would have also served to prevent larger, uncontrolled wildfires that would have devastated plant resources.

Perceptions of the environment relate to a complex interplay of cultural, political, economic, and religious variables. The definition of landscape, the conceptualization of available resources and their fragility, the boundaries of polities and their fluidity, and the cultural value put on certain products such as cattle all influence environmental strategies and economic stability. They result in choices in settlement patterns, herding strategies, and importance of and dependence on local and regional trade. Securing access to water and grazing grounds would have been key for the Bosutswe region. This may have been accomplished by a change in herd management strategies, which, in turn, would have impacted the trajectory of the political economy for the region.

BOSUTSWE (700-1700 AD)

Three hectares in size and located at the edge of the Kalahari Desert, Bosutswe served as a gateway trade center for goods crossing into the interior of southern Africa (Denbow 1990, Denbow et al.. 2008; Wilmsen et al. 2009) (Figure 4.4). Smaller sites such as Khubu la Dintša and Mmadipudi Hill, both described in later this chapter, clustered around Bosutswe to form the local regional settlement pattern. A sequence of twenty-eight radiocarbon dates at Bosutswe spans from 700-1700 AD. In exchange for luxury items such as glass beads (Wood 2000, 2005, 2011, 2012) and metal jewelry, products like specularite (Robbins et al. 1998) and salt (Matshetshe 1998) came from the Makgadikgadi and the Okavango to the northwest. Cattle herding, subsistence farming, ostrich eggshell beads, and iron and bronze manufacture further contributed to the local and regional economy and trade goods (Denbow 1990).

Although politically and somewhat culturally autonomous through most of its occupation, Bosutswe occupied a regionally subordinate position in relation to its powerful peer polities (Denbow and Miller 2007) of K2, Mapungubwe, Great Zimbabwe, and Khami (Chapter 3). However, as these other, larger polities rose and fell, Bosutswe managed to sustain itself by strategically realigning itself with the largest polity in power. In other words, Bosutswe secured its participation in the long-distance exchange network through regional alliances that, in turn, partially underwrote its political influence. Glass beads are an indicator of these long-distance trade connections, which stretch from the Mozabiquean coast to Zimbabwe, South Africa, and Botswana, and across the Kalahari into the Zambezi Valley and beyond. These glass beads figured predominantly as prestige goods in the political economy of the Bosutswe region (Chapters 7 and 8).

In the 13th century, Bosutswe experienced a period of increased accumulation of luxury trade goods and other status items. This long distance trade was controlled by an elite class, referred to as the Lose, who distinguished themselves from commoner inhabitants of the Bosutswe region through distinctive decorated ceramics that mimicked the ceramics of Mapungubwe (Chapter 3). Long-distance trade with Bosutswe peaked around 1300-1450 AD, when social stratification sharply increased at the site. Concentrations of beads and metal jewelry cluster at spatially segregated Lose elite houses associated with this period. These Lose houses, located in the center of the hilltop, were further demarcated through the use of red gravel floors and double walled houses. At the same time, cattle herding strategies at Bosutswe shifted from a centralized pattern, where animals were kept in a central kraal onsite, to a dispersed pattern, where cattle were kept offsite at dispersed hubs. A change in herd management strategy was one way to cope with the effects of long-term overgrazing around a permanent settlement such as Bosutswe. The increasing importance of long-distance trade, rising inequality, and changes in herd management strategies were likely linked, and demonstrate well the social and political impact associated with these economic opportunities. These environmental and economic strategies played out in various ways in the Bosutswe region, as increasing dependence on the hinterland for grazing grounds created opportunities, strengthened dependency, and may have constrained the expansion of class distinction.

Chronology and History

The occupation of Bosutswe can be divided into five periods as differentiated by changes in ceramics, metallurgical technologies, and glass beads: Taukome (700-1000 AD), Toutswe (1000-1200 AD), Early Lose (1200-1300 AD), Middle Lose (1300-1450 AD) and Late Lose (1450-1700 AD) (Huffman 2007; Denbow 1999, 2002; Denbow and Miller 2007; Denbow et al. 2008) (Figure 4.5). These five periods correspond to: 1) Bosutswe's initial settlement as a cattle post as southern Africa starts to participate in the Indian Ocean trade (Taukome); 2) the expansion in size at Bosutswe that corresponds to long-distance trade with K2 and the Okavango-Zambezi region (Toutswe); 3) increased status intensification and access to long-distance trade with the regional centers Mapungubwe (Early Lose) and 4) Great Zimbabwe (Middle Lose); and 5) a decrease in wealth and trade during the occupation of Khami occurred (Late Lose) ending with abandonment in the 18th century AD. Mmadipudi Hill and Khubu la Dintša fit into two different periods of this sequence: Mmadipudi Hill, the Taukome and Toutswe periods, and Khubu la Dintša, the Early and Middle Lose periods (Chapters 6, 7, and 10). The majority of the archaeological excavations involved in this dissertation were concentrated at Khubu la Dintša (Chapters 5-9). Therefore, events during the Early and Middle Lose periods (1200-1450 AD) are highlighted in the following discussion.

The Taukome period, 700-1000 AD, was a formative time at Bosutswe, when occupation consisted of low-density cattle posts on the eastern edge of the hilltop. There is no evidence for social stratification and few Indian Ocean trade goods. Elsewhere in southern Africa, some settlements began participating more in the Indian Ocean network, supplying iron (Chapter 3; Burke 1962, Denbow 1983, Freeman-Grenville 1962, Hanisch 1980, Huffman 2007, Sinclair 1982).

The Toutswe Period, 1000-1200 AD, provides the first evidence for chiefdoms in the region. Political economic development paralleled increasing trade to the coast and an influx of luxury trade goods. K2 became the regional center for Indian Ocean trade, while Toutswemogala and Bosutswe gained status through its large cattle herds (Chapter 3). Bosutswe grew in size. Faunal remains provide one of many lines of evidence of Bosutswe's trade links to the region. Domesticates such as cattle, goat, and sheep were supplemented by local wild game such as zebra, wildebeest, and eland (Atwood 2005, Denbow 1999, Plug 1996). Trade ties with other regions are indicated through fish and fauna such as lechwe, sitatunga, hippopotamus, and crocodile. The closest sources for these types of fauna would have been Lake Xau and the Boteti River, over 200 kilometers away (Plug 1996). Recent petrographic analysis of ceramics suggests there were trade links between the Okavango-Zambezi region and Bosutswe around 1000 AD (Wilmsen et al. 2009). A Ngamiland (NW Botswana) red-slipped bowl found at Bosutswe reasserts this notion of a well-developed interior trade following the Boteti River (Denbow 1990, 1999).

The Early Lose period, 1200-1300 AD, saw the growing involvement of Bosutswe in the Indian Ocean trade network. Concentrations of glass trade beads and cowry shells provide evidence of this increase. The Lose style of ceramics, a decorative mimic of the ceramics of its powerful peer polity Mapungubwe, accompanied spatially segregated elite housing with basalt gravel floors and double walls (Denbow and Miller 2007, Denbow et al. 2008). Cattle herding strategies shifted from a centralized to a dispersed pattern to cope with issues of long-term overgrazing around permanent settlements (Denbow et al. 2008). The lack of evidence for overgrazing at Bosutswe suggests food procurement strategies involved trade relationships within the wider region to dispersed hubs, potentially at Khubu la Dintša and other similar sites, to maintain quality grazing (Denbow et al. 2008).

A major burning episode separated the Early Lose from the Middle Lose period, 1300-1450 AD. This burning episode has been documented in both elite and non-elite areas across the settlement, and date tightly to the early 14th century (Denbow and Miller 2007, Denbow et al. 2008, Denbow in conversation 2013). Possible reasons for this burning episode include: 1) an accidental fire, 2) conflict either from internal groups or regional instability, and 3) an intentional, symbolic burning following a short hiatus in occupation. There is a possibility that Bosutswe may not have been inhabited for a short period after this fire (Denbow in conversation 2013). If so, the population, including the Lose elite, may have taken shelter at more defensible hinterland sites.

Luxury trade goods and status markers such as glass and shell beads and metal tools increasingly distinguished the Lose elite during the Middle Lose period. Bronze and gold appeared for the first time, concentrated exclusively at the Lose houses. This was also the era of florescence of the Lose ceramic style (Denbow and Miller 2007). Great Zimbabwe graphite-burnished ceramics are also found at Bosutswe in small numbers during the Middle Lose period. Iron gongs and crosses found in southern Africa suggest interior trade extended to the Congo region (Fagan 1961). A lead-tin ingot recovered from the Middle Lose deposits at Bosutswe could point in the same direction (Denbow and Miller 2007).

The Late Lose Period (1450-1700 AD) was a time of decline of trade goods and elite status at Bosutswe. The trade relationship between Bosutswe and other southern African polities weakened, and the quantity of luxury goods at Bosutswe declined. By the 18th century, Bosutswe was reduced to a smaller settlement on the hilltop. Bosutswe was abandoned around 1700 AD.

LOSE, THE LOSE PERIOD, AND THE "LOSE ELITE"

The "Lose" name originates from a Late Iron Age site located twenty-six kilometers north of the present-day Mahalapye. Lose has only been described briefly (Kiyaga-Mulindwa 1990), and analysis of recent excavations by James Denbow in 2011 and 2012 is still forthcoming. Lose (900-1460 AD) is located approximately 160 kilometers south of Bosutswe. Because this Lose ceramic style is found at both Lose and Bosutswe, trade relations likely existed. Lose contained three different settlements on the hilltop, one with Lose ceramics, and two with Toutswe ceramics. The extent of settlement is difficult to determine as half the hill was blasted away by (now inactive) recent gravel mining. Lose is believed to be a prehistoric quarry for its micaceous granite (Denbow 2011 in conversation). However, rock debris rained down by the explosive mining obscured potential prehistoric quarry areas and made grain bin foundations hard to distinguish. A stone enclosure of approximately 30m in diameter contains a major Iron Age midden with Lose ceramics. Lose ceramics, identified through incised punctates that often fill triangle motifs (Chapter 7), are uniquely found at Lose, Bosutswe, and Khubu la Dintša (Chapter 7 and 9). At Bosutswe, Lose ceramics were associated with the elite; apart from a low, circular stone wall, there are very few indicators of high status at Lose (Denbow in conversation 2013). This dissertation contributes another site – Khubu la Dintša – at which Lose ceramics were found (Chapter 7 and 8). At Khubu la Dintša, Lose ceramics were found along with Toutswe-style ceramics and high status items (Chapter 7).

The development and incorporation of the Lose identity presents an interesting example of the development of inequality in the African interior. Around 1200 AD, the ceramics at Bosutswe shifted from primarily Toutswe wares to include a style known as Lose ceramics. These early Lose ceramics overlapped in dating with Toutswe ceramics, associated with elite and non-elite houses, respectively, that were spatially segregated. Excavations at Bosutswe by Denbow in 1990 and from 2000-2 and 2007-8 included units in four separate areas of the hilltop, known as "Precincts:" the Central, Western, Eastern, and Southern Precincts. The Central Precinct was the area where most Lose ceramics were found. These Lose elite ceramics were part of a larger set of societal indicators of class, including the spatial separation of houses and their architectural distinction, and prestige goods such as glass trade beads and metals. Lose houses were daga structures made from basalt soils brought from the base of the hill. Some of these had double walls and sunken floors, another similarity to Mapungubwe (Denbow and Miller 2007). By the Middle and Late Lose periods, red floors further distinguished these elite structures from others on the hilltop (Figure 4.6). Most of the glass beads, almost all the manufactured metals, and all the bronze were found in Central Precinct.

In contrast, the other precincts at Bosutswe did not see significant changes in housing structures, and had fewer Lose ceramics and prestige goods. Of the metal artifacts uncovered in the 1990 and 2001-2002 excavations, eighteen of the twenty-three bronze artifacts, forty-three of the forty-six copper artifacts, one hundred forty-one of the one hundred fifty-six iron beads and bangles, and thirty-three of the thirty-four iron tools were found in the Central Precinct (Denbow and Miller 2007:279). The concentration of iron tools may relate to the perceived value of these objects (Chapter 3). They may have been controlled by the elites, who stored them in or near their elite houses.

A snapshot of the emerging hierarchy at Bosutswe – and the degree to which social, economic, and spiritual aspects of society intersected – is encapsulated by a feature known as "the hyena floor" (Denbow et al. 2008:477-478). On the hyena floor, hyena teeth from at least eight individuals were found. These teeth were contemporaneous with an ivory piece, glass beads, and ninety chert and laminar white agate pieces. The amygdaloidal agate comes from basalt outcroppings, which form the base of these hills and much of the underlying geology of the region (Thebe 2004). Both the hyena teeth and agate pieces may have had religious significance. The hyena floor lies directly on top of (immediately after) the large burn layer mentioned earlier (Denbow and Miller 2007, Denbow et al. 2008). The event associated with this burn may have to do with a violent episode in the wake of Mapungubwe's collapse or the rise of the regional hegemony of Great Zimbabwe (Denbow in conversation 2013). Regional instability and a power gap in the monopoly of the Indian Ocean trade may have resulted in a particularly violent time in the African interior. This struggle may have been related to the emergence of the Lose elite. On the other hand, it may have been a far more benign, ritualistic burning symbolic of the competitive relationship and subsequent negotiations between Bosutswe and Great Zimbabwe. Khubu la Dintša, described below and elaborated on in Chapters 5-9, provides insight to these local dynamics of the Bosutswe region.

The incorporation of Lose symbols involved attachments to outsiders – to Mapungubwe, located 300 kilometers away, and the cultural traditions there. The focus, however, was likely to display that affiliation to the local population. Attachments to Mapungubwe affirmed exclusive access to participation in long-distance trade. Similarity in ceramic and housing styles with Mapungubwe suggests the adaptation of external symbols to distinguish elite from non-elite members of the society. For example, as a prestige good, bronze objects were worn as jewelry in a toolkit of visible prestige and power (Figure 4.7). The bronze at Bosutswe was created from a copper-tin alloy. The amount of tin included was altered to make the bronze a yellowish color similar to gold, a well-documented status item of the regional elite (Denbow and Miller 2007). Other prestige goods included trade beads and ostrich egg shell beads. Beyond the trade items themselves, "trade affiliation" may have also implied status. Bosutswe's role as the trade center of the region must have had tremendous symbolic importance related to its wealth in cattle and access to these external trade networks. This symbolism may have played a key part in maintaining its status (Ames 2007).

KHUBU LA DINTŠA (1220-1420 AD)

Khubu la Dintša, a hilltop site twelve kilometers northwest of Bosutswe, fits into the Early and Middle Lose sequence (Figures 4.8 and 4.9). The name "Khubu la Dintša" means “The Place of the Dogs,” a shortened version of “The Hill where the Lions were Chasing the Dogs.” Oral history associated with the name refers to a time when there were still lions in the area which used to corner the local farmers' dogs up on top of the hill and kill them. There are also deeper mythical allusions to the beginning of the world, when lion tracks were impressed on the "wet" stone of the hilltop (Denbow and Mosothwane 2008; Denbow, Mosothwane, and Ndobochane 2010; Chapter 13). Khubu la Dintša's proximity to Bosutswe and the visibility of Bosutswe from Khubu la Dintša (and vice versa) suggest that these settlements undoubtedly interfaced. Two stone walls border a main Iron Age occupation site of approximately .95 hectares. Excavations at Khubu la Dintša explored Khubu la Dintša's role in the Bosutswe region and its relationship with Bosutswe. Increasing involvement in long-distance trade provided incentive for people to cluster and settle around Bosutswe. Including sites such as Khubu la Dintša into the conversation about how the Bosutswe region functioned helps build a local landscape of human-human and human-environmental interaction. People are located within a landscape and deal with environmental issues through social strategies. In the Bosutswe region, environmental factors may have necessitated strong relationships between the center and the hinterland.

Between the walls, patches of *Cenchrus ciliaris*, or buffalo grass, grow preferentially in the rich midden and kraal associated with the Toutswe period Iron Age deposits (Denbow 1979). This distinctive grass grows among stone circles, stone-lined pathways, and dilapidated wooden and clay structures, the remains of a modern *phekolo* church that used the site for its ceremonies from the mid-1990's to early 2000's. Seventy square meters of test units and excavation units provided data and dates from 1220-1420 AD. The associated material culture provided the most intriguing aspect of the excavations. A quarter of the ceramics (25.5%) were distinctly Lose, and 229 glass beads were found at the site (Chapters 7-8). The significant concentration of prestige goods at a hinterland site like Khubu la Dintša implies its importance (Chapter 9).

MMADIPUDI HILL (550-1200 AD, APPROXIMATED)

Mmadipudi Hill is a silcrete hilltop situated three kilometers west of Bosutswe (Figure 4.10). "Mmadipudi" is a shortening of its fuller name, "Where the Leopards ate the Goats." Mmadipudi Hill was occupied during a crucial turning point in the region's earlier Iron Age history, when small cattle posts coalesced and expanded to form the major regional trading center of Bosutswe. A series of three radiocarbon dates from a test unit dug in the 1980s by James Denbow provided radiocarbon dates ranging between ca. cal AD 560-890±70 (calibrated at 2δ; TX6986, 6980, and 6984) for the site. However, the 2011 excavation extended the occupation possibly through the 12th century AD (Chapter 10). Mmadipudi Hill overlapped with Taukome and Toutswe cultural periods and provided information regarding regional development in both these periods.

Mmadipudi Hill is approximately four hectares in size. As such, it is larger than both Bosutswe and the occupation area at Khubu la Dintša. There is less cultural deposit on the western half of the site. The center of the site contains a large central kraal and midden area, as indicated by both the vegetation patterns and topographical rise versus the surrounding areas. To the east, a slight rise in elevation contains a second, smaller kraal. Outcroppings of boulders and silcrete bedrock are more frequent in this area of the hilltop. A test unit dug in the mid-1980's revealed cultural deposit of approximately of 1-1.5 meters in depth. In 2011, grazing goats from a cattle post located at the hill's base cleared most of the vegetation on the hilltop. The lack of ground cover made Mmadipudi Hill a prime candidate for the geophysical survey discussed in Chapter 10.

Chapter Five: Research Questions and Methodology

Two Iron Age sites, Khubu la Dintša and Mmadipudi Hill, are the focus of my dissertation research. Geophysical survey and archaeological investigations at these sites were first steps towards understanding the relationship between Bosutswe and its hinterland. The political economy of these satellite communities likely varied with changes in the wider status of Bosutswe. Yet, their contribution towards Bosutswe's development, sustainability, and collapse are unknown. The social dimensions of the changes in political and economic relationships may have influenced the development of inequality during the African Iron Age. The Bosutswe region provides a unique combination of ways in which a prestige goods economy developed, status was defined, and power strategies were employed. Social and environmental constraints may have limited the spread or degree of inequality in the Bosutswe region. The Bosutswe region offers a new perspective on critical issues affecting such early complex societies: the emergence of inequality, horizontal and vertical differentiation, the centralized consolidation of power, and a bottom-up perspective on power negotiations and choice. As the majority of the excavations involved in this dissertation occurred at Khubu la Dintša, Khubu la Dintša and the Early and Middle Lose periods are the focus of the research questions below. The geophysical pilot study at Mmadipudi Hill is addressed separately in Chapter 10.

RESEARCH QUESTIONS

This dissertation addresses several questions about Khubu la Dintša and the Lose period in the Bosutswe region. These questions deal with the date of occupation and its implications; the type of materials found at the site and their social and economic importance; and the implications of these dates and materials on how inequality, status, and power operated in this early complex society. The questions fall under three primary categories, and include:

1) Khubu la Dintša's occupation and its stone walls

Where does Khubu la Dintša fit into the Bosutswe trajectory? When were the stone walls built, and what was their purpose?

Questions about the rise of inequality at Bosutswe are addressed through the viewpoint of one of its hinterland settlements, Khubu la Dintša. Stone walling surrounds the hilltop of Khubu la Dintša. This stone walling may be symbolic or defensive, but either way it is unique: Bosutswe has none. A test excavation in 2010 provided a radiocarbon date of 680±40 (Beta 285258, charred material), with a possible calibrated date range of ca. cal AD 270-1320 and ca. cal AD 1350-1390 (calibrated at 2δ), implying at least some of the occupation is an Early and Middle Lose site. Further dating tightens the occupation period at Khubu la Dintša. Fitting Khubu la Dintša into the Bosutswe chronology helps us better understand how the development and expansion of the Bosutswe polity factors into the local region.

The date of the construction of the stone walls at Khubu la Dintša may suggest alterations in the hegemony of Bosutswe within the region. If the walls date to the Early or Middle Lose periods, they may represent protection by Bosutswe of agropastoral resources and the associated settlement. Furthermore, they may relate to political unrest in the region and a perceived need for protection. If they date to the Late Lose period, when Bosutswe is in decline, they may represent a lack of regional control by Bosutswe. Khubu la Dintša may have constructed these walls to differentiate itself from Bosutswe, as well as to operate independently, rather than under the hegemony of Bosutswe. The stone walls may have been a way to define and defend Khubu la Dintša's entry into the regional trade routes. If so, changes in access to resources including livestock, grazing, farmland, and water may have occurred, augmenting and aiding in the decline and abandonment of Khubu la Dintša and later Bosutswe. This again would raise the question of Bosutswe and its reliance on the hinterland for survival.

2) The role of Khubu la Dintša in the Bosutswe region

Are Bosutswe and Khubu la Dintša linked socially and economically? If so, how? Does the development of inequality at Bosutswe impact the hinterland region? What sort of power relationships existed between Bosutswe and Khubu la Dintša?

At Bosutswe, the display of status articulated spatially through the use of material objects (Chapter 4). The degree to which this holds true in the hinterland warrants investigation (Chapter 2). The valuation of objects lies in the processes of creation of cultural beliefs that come to adhere to daily use and exchange. At Khubu la Dintša and Mmadipudi Hill, identity would have been expressed through performance and materiality, power in terms of access to cattle; to glass, metal, and shell beads as well as to iron blades; through food and its presentation in ceramic vessels; through marking the hilltop site of Bosutswe as part of everyone’s visual landscape. Site hierarchy should be indicated by differentials in diet and access to luxury goods. If site hierarchy exists, and Bosutswe had greater access to status goods than its hinterland, it would imply that Bosutswe's dominance of long-distance trade held great influence over the local market. Yet, even if Bosutswe controlled the production and distribution of high status goods, there would have been opportunities in the hinterland to participate in this exchange. Local production of goods would have been necessary for sustaining the population at Bosutswe as well as to bolster goods for regional trade.

At Bosutswe, the Early and Middle Lose periods were a time of social differentiation and the indexing of individual and factional prestige. Both local and extra-local symbols were important for the development of status and the centrality of power at Bosutswe. For Bosutswe, obtaining long-distance trade goods such as glass beads would have allowed for the purchase of another widely recognized status symbol – cattle – and potentially set up a system of patronage in the Bosutswe region. Access to trade goods and cattle wealth may have been different in satellite communities. Artifact assemblages from Khubu la Dintša show the expansion of the prestige goods economy and how tightly Bosutswe controlled the long-distance trade and the redistribution of trade goods. They also indicate the opportunities neighboring communities may have had to access these forms of wealth, and associated exclusionary and inclusionary power strategies.

3) The contribution of Khubu la Dintša towards understanding the development of inequality and complexity in the Bosutswe region and beyond

Can Khubu la Dintša play an explanatory role for the rise and fall of Bosutswe?

The distribution of artifacts may represent equal or unequal access to status goods. They also may represent the currency of social and political obligations, non-material dimensions of everyday life such as marriages, the leasing of cattle, and political alliances. If these network strategies included hinterland communities, the inhabitants of Khubu la Dintša may or may not have had access to prestige goods or cultural affiliations. The degree to which site hierarchy, inequality, and prestige goods existed – or mattered – in the hinterland may be indicated by the quantities of luxury items found at Khubu la Dintša. Killick (2009) proposes that inequality can be understood through the degree of dependency groups have on one another. Societal structure, economic systems, environmental constraints, social and political reproductive goals, and collective memory and historical traditions are a few of an exhaustive list of factors that influence why and how relationships of dependency are formed. Opportunity and dependency on a local and regional level provides one explanation of the formation of the polity of Bosutswe, the development of social stratification in the Bosutswe region, and the eventual collapse of the polity.

Throughout its thousand years of occupation, Bosutswe experienced a number of major events that likely impacted its surrounding region. These events included the expansion of long-distance trade, the rise of the Lose elite, changes in herd management strategy, a major burning episode, and Bosutswe's decline. In southern Africa more generally, this was the period when Mapungubwe collapsed and Great Zimbabwe became the primary center, to be later replaced by Khami (Chapter 3). What these changes meant in terms of local political dynamics, how the local economy functioned, and changing social relationships extended beyond the centers and cities. How these processes affect the broader mosaic of peoples on the Iron Age landscape must be studied rather than assumed. Khubu la Dintša would have been involved in, impacted by, and perhaps even responsible for some or all of these changes.

METHODOLOGY

My project focuses on four months of survey and excavation at the hilltop site of Khubu la Dintša, located twelve kilometers northwest of Bosutswe and the next largest Iron Age site located in the vicinity of Bosutswe (Figures 5.1 and 5.2). Khubu la Dintša was chosen for excavation over other hinterland sites due to its extensive and fairly well preserved and protected deposits. Furthermore, Khubu la Dintša fit into the Lose period. At Khubu la Dintša, two stone walls border the occupation site of 0.95 hectares, with a depth of cultural deposit ranging from 35-55cm. Of the 9,375m^2 between the stone walls, 71m^2 was excavated, or 7.57% of that total area. The overall goal of the excavations was to explore political, economic, and social relationships between Bosutswe and Khubu la Dintša. Specifically, the relationships included: 1) the trade and degree of dependency between Khubu la Dintša and Bosutswe, 2) how changes in herd management strategies may have affected the relationship between Khubu la Dintša and Bosutswe, 3) the erection of stone walls at Khubu la Dintša and whether they indicate regional instability and independence or protection and reliance on Bosutswe's authority, 4) status and the degree of inequality in the hinterland based on the concentration and distribution of prestige goods. Ten 1x1 meter test units determined the location of three 4x4 and one 2x2 meter excavation units at Khubu la Dintša. These units corresponded to households and living areas (2), midden (1), and kraal area (1). Additionally, one 1x2 meter unit was placed along the face of one of the stone walls in an attempt to date it.

The author directed excavations in collaboration with student volunteers from the University of Botswana. A crew of five UB trainees, two former graduates of UB, and six local workers, in varying combinations, assisted the author throughout the season. Twelve weeks were budgeted for the subsurface excavation, and an additional four weeks for post-fieldwork analyses. This project consisted of five parts: 1) completion of surface mapping and survey at Khubu la Dintša begun in 2010; 2) test units across the site; 3) the expansion of some of the test units into larger excavation units; 4) identification and cataloguing of artifacts and features; and 5) spatial and statistical analyses of the database with comparison to the Bosutswe collection. Although these results were not conclusive in addressing questions of hierarchy versus heterarchy or the development of inequality, they increased our understanding of interactions on the local landscape. Contracted services include radiocarbon and AMS dating, faunal analysis, LA-ICP-MS analysis, and use-wear analysis.

The initial cataloguing of materials and entering them into the project database was conducted post-season, when the bones, diagnostic ceramics, shells, glass beads, OES beads, metals, and lithics were brought to the National Museum of Botswana for storage. The fauna is still undergoing analysis by Cynthia Mooketsi at the University of Botswana. As such, further discussion of the faunal remains is minimal. Faunal remains are mentioned with reference to the total mass in grams recovered, and occasionally identified if the author's extremely limited knowledge of faunal remains permitted. Photographs of a few of the jaws, with intact teeth, are included for the reader's reference. Four hundred twelve animal teeth were recovered in the 2011 excavation at Khubu la Dintša. It is this author's hope that future stable isotopic analysis by Dr. Morongwa Mosothwane, also of the University of Botswana, will provide information about diet and environmental conditions of the local area (Mosothwane 2010, Denbow et al. 2008). Both the fauna and the stable isotopic analyses will help strengthen – or challenge – some of the arguments put forth in this dissertation.

The Khubu la Dintša database incorporates thirty-five artifact typologies of local and non-local artifacts (including decorated and undecorated ceramics, metal tools, glass and shell beads, and lithics) along with their particulars (count, weight, material) and provenance. These are the same typological categories used in the Bosutswe artifact database (2000-2002, 2009-2010). Similarities and differences to this database were compared with some of the artifacts (Chapter 7). Data from the excavations included local and non-local utilitarian and prestige artifacts including undecorated and decorated ceramics; iron, copper, and bronze tools; glass trade beads; decorated bone; and ostrich eggshell and marine shell beads and jewelry. Discussion of the following data includes reference to unit/levels, the 1x1x0.1m level particular to an excavation's subunit (e.g. 7B3 Level 2).

Surface survey

Surface survey and feature mapping with a handheld GPS and a total station better articulated site extent and activity areas. Modern church remains, general activity areas, the main kraal, and other potential areas of cultural deposit (i.e. houses) were noted and mapped, as well as some of the visible features (Figure 5.2). Visible features such as grain bins (Figure 5.3), kraals (Figure 5.4), and stone walling (Figure 5.5) indicated extended site use.

The Iron Age settlement at Khubu la Dintša was enclosed between two stone walls that run perpendicular to the edges of the hilltop in an East-West direction. The area between the walls is approximately 125m in length, and 75 meters in width. Site disturbance is an issue. A modern (now abandoned) church that held its services on the hilltop during the mid-1990's until the early 2000's moved many of the stones from grain bins and stone walling to create a courtyard and line pathways along the side and top (Figure 5.6; Chapters 8 and 12). Although many of the surface features such as grain bin foundations and the stone walls have been disturbed, some surface features are still evident. The stone walls, although partially collapsed, still line both sides of the Iron Age settlement. Two possible wall partitions extend from the Southern Wall inwards towards the site. The kraal and house mounds appear mostly intact, and some of the grain bin foundations and grinding platforms remain as well.

The east central portion of the site has a visible mound of white ashy material along with clusters of buffalo grass and surface sherds and indicate the location of Iron Age midden and kraal areas (Figure 5.7). Twenty meters south of the center of the mounded area, the church dug a small pit (3x5m) to obtain the white ashy soil with which to line their main dance floor. White is a color closely associated with the ancestors. The northern and eastern portions of the settlement had the least amount of anthropogenic disturbance. The eastern and southern ends experienced the highest degrees of surface erosion, as indicated by the depth of the test units to the limestone base.

Some portions of the site that contained grain bins and other features remained in situ (Table 5.1). This was especially true in the northeastern section at the eastern wall, and near the edges of the site where church activity was less. A few of the Iron Age grain bins were undisturbed. Six grain bin foundations, located off the main paths of the church's core area, were recorded. However, due to the degree of surface disturbance at the site, the author was unable to quantify the number and size of grain bins. If representative, the size and number of grain bins and number, size, and composition of kraals can relate to productive strategies such as farming or herding, and differential access to resources such as cattle, smaller stock, and grain. As this was difficult to discern at Khubu la Dintša, no further analysis on the grain bins was taken.

A metal rod hammered into the ground was set as the permanent datum, placed at one of the highest points in the center of the settlement (Figure 5.8). Although the general location of the midden and kraal area was known, the precise location and concentration of settlement areas such as households and activity areas were not visible from the surface. Therefore, a series of 1x1 test units defined potential areas of interest for excavation. These test units transected the settlement, placed every 20 meters. Six units were dug in total. Two secondary, parallel lines of test units, 20 meters on each side of the transect line, tested areas that appeared to be less eroded. Each of these secondary lines included two test units. In all, ten 1x1 test units helped characterize the site, determine its extent, and target areas for expanded excavations (Figure 5.9).

Test Units

Over the course of two weeks, kraal, midden, and potential housing areas were tested at the site of Khubu la Dintša. Six 1x1m units spaced every 20 meters along a systematic grid determined the optimal location for fuller sub-surface excavations. Four additional test units placed 20 meters north and south of the transect line in areas least affected by erosion ensured other subsurface features were not missed.

Concentrations of the materials were especially located in the top 20cm of the cultural layers. The depth of cultural material in the units ranged from 10cm to 50cm, which partly depended on the area where the units were placed. The cultural layer in each unit ended in sterile or near sterile soil above silcrete bedrock. As the depth approached the bedrock in various units, the soil became increasingly brownish-red in color. This brownish red color was similar to the color of the silcrete bedrock, and indicative of a mixture of the slowly eroding silcrete and the soils above it. The bedrock itself was jagged, uneven, and plate-like, so that it could be broken through in places. When broken, more layers of silcrete, pebbles, and stone were revealed (Figure 5.10). No cultural materials were found underneath these silcrete plates. Due to the unevenness of the bedrock, each unit's terminal level was likewise pocketed and uneven. Units in the eastern and southern portion had shallower deposits (Figure 5.11); units in the kraal and midden, western, and northern areas of the settlement contained deeper deposits. Test Unit 5, placed in the highest point of the white mounded material, proved the exception; the bulk of materials came from Level 4 (30-40cm in depth). Test Units 6 and 7 also had significant cultural materials in their Level 3 (20-30cm) layers.

The western, central, and northern areas of the site appeared to be the most well-preserved portions of the settlement. The eastern wall was less damaged by natural and anthropogenic activity than the western wall, most likely due to the western wall's proximity to the modern church's activities. Artifacts from the test units are described below in brief. These artifacts and their cultural histories are expanded in Chapter 7.

Ceramic sherds (N=2,358) and 6,024g of animal bones were recovered in the test units, with the heaviest concentrations occurring in the western and northern parts of the site. These areas also contained the deepest cultural material of the site. TU2 and TU5 produced the greatest amount of bones and TU4 and TU6 the next highest concentrations. TU5 contained a jaw of a medium-size animal, possibly a goat or sheep (Figure 5.12). One piece of daga was discovered in TU7. TU 7 was later determined to be a house, as indicated by the discovery of a partially intact floor during excavation (Chapter 6). A grain bin foundation was discovered at the end of Level 1 in TU8 (Figure 5.13). Below the stones, in Level 2, a high concentration of ceramics was found. Although TU8 was not excavated any further, it may also be a household area.

Decorated sherds (N=18, 0.76% of total sherds recovered) were discovered in all test units except for TU1 and TU3. These sherds included Lose pottery and Toutswe pottery types, although many were indeterminate (Figure 5.14). Descriptions of sherd decorations and motifs are continued in Chapter 7. Due to the small sherd size (fragmentation rate = 6.32g per sherd) and lack of recovery of whole vessels, it was difficult to categorize many into distinct Toutswe or Lose categories. However, characteristic Lose sherds with series of circular punctates arranged in an interlocking triangular pattern were noted on multiple occasions. Before this observation, Lose-style ceramics had only been discovered at two other sites: Lose and Bosutswe. Lose-style ceramics and Lose elite at Bosutswe are discussed further in Chapters 2, 5, 7, and 9.

One small piece of slag (2g) was found in TU2 and three pieces of iron were found in TU8, Level 2. One of these was an iron blade (Figure 5.15). Three metal beads were discovered in the test units, one each in Units 4, 6, and 7. Metal objects are another indicator of status. More metal beads, both iron and copper, were found in the excavation units (Chapter 7). Thirty complete ostrich eggshell beads (OES) and twelve broken OES beads were discovered. OES beads are also markers of status associated with both hunter-gather and Bantu groups in southern Africa (Chapter 7). Seven OES beads in stages of their manufacture and nineteen OES fragments, the raw material from which beads were made, suggest that beads were made locally at an onsite workshop. A grinding stone was found in TU6 Level 2, suggesting that household activities took place at the site (Figure 5.16). Forty-four lithics and ecofacts were discovered in the test units. Further study of lithics occurred only with the excavation unit materials. These are discussed separately from the other artifact types in Chapter 11.

The other surprising discovery in the Khubu la Dintša test units was thirty-three glass beads. Glass beads were a product of long-distance exchange with the Indian Ocean area, a trade thought exclusively controlled exclusively by large polity sites such as Bosutswe (Chapters 7-9). Black, white, yellow, turquoise, and blue-green beads were recorded. The substantial presence of Indian Ocean beads along with Lose ceramics hint at a complex and interdependent relationship between Bosutswe and Khubu la Dintša which is further explored in the analysis of the materials from the excavation units and their interpretation (Chapters 7-9).

Excavation Units

More extensive excavation units were selected from the test units. Three 4x4 meter units, one 2x2 meter unit, and one 2x1 meter unit (54 square meters) were excavated over nine weeks at the central midden (4x4), the central kraal (2x2), house and household areas (2 4x4's) and stone walls (2x1) (Figure 5.17). Daily activities at the site were defined through these excavation units such as the midden. The unit in the kraal area recoverd more fauna than the other units, ans in the future it may address the type and age of stock at the site. The kraal is also an area where human remains may be recovered. Although none were found, future excavation here may produce human burials, with which more direct examination of the site's inhabitants may be conducted. Two units were placed in household areas, defined by finds such as daga or prestige goods from the test units. Household units addressed differences and similarities in ceramics, metals, beads, and jewelry collections between different areas at Khubu la Dintša and provided a general indicator of Khubu la Dintša's status vis-à-vis Bosutswe. Human remains, in particular children, may be buried in houses, but none were recovered. Five radiocarbon and AMS samples helped define Khubu la Dintša's chronology. One of these was taken from the eastern wall's base to date its construction.

Both location and the quantity of materials (bone and ceramics) were used to determine which test units would be extended to 4x4m excavation units. Ceramic count and bone weight were standardized separately on a scale of 1-100, where a score of 100 represented the highest count of that particular material. For example, TU 5 produced the highest count of ceramic sherds (N=555), and therefore received a score of 100. TU 6 had 335 sherds, and when standardized (355/555*100), it received a score of 60.36. Ceramic and bone standardized scores were given equal weight in determining where the excavation units would be placed. The standardized scores for the bones and ceramics from each of the test units were added together and divided by two to give a combined score from 1-100. A score of 100 would be the highest combination possible for a unit's concentration of bone and ceramic material. Test Unit 7 received the highest score of 66.07 ([100+38.24]/2), while Test Unit 1 received the lowest score of 0.09 ([0.18+0]/2). Units 5, 6, and 7 received the highest scores (62.24, 69.12, and 60.12, respectively). Although Test Unit 4 had a lower score (41.81) than Test Units 2 and 8 (51.38 and

60.16), it was chosen for excavation due to its location in the visible kraal/midden area. Additionally, TU 4 contained a high number of glass beads (7) and lithics (12), both artifacts of interest for the project goals (Chapters 7, 8, and 11). Test Units 4, 6, and 7 were extended to 4x4 meter units. Test Unit 5 was only extended to a 2x2m unit due to time and budgetary constraints. These excavation units (4, 5, 6, and 7) were used to determine the general character of the site, its activities, and to generate a substantial database for comparison to the previously excavated Bosutswe material by Denbow's 1990, 2000-2, and 2009-10 campaigns (Chapters 7 and 9). Additionally, a 1x2 meter unit was placed along a relatively undisturbed portion of the eastern wall on the interior (western) side. The wall unit ran two meters along the natural face of the wall. Its objective was to obtain a charcoal sample in the cultural material along the subsurface base of the wall. The date obtained from the charcoal sample provided a proxy for the construction of the stone wall (Chapter 6).

The 4x4 meter units were built sequentially based on the concentration of finds in particular areas of the 1x1m units and the visibility of cultural material in the unit's walls. Thus, each 1x1 became a 2x2m unit, then a 2x3m unit, et cetera, until the 4x4m unit was complete. Each horizontal row was given a number, each vertical row a letter. The excavation unit number, borrowed from the corresponding test unit name, preceded this individual letter-number identification code. The numbers as well as the letters were given in sequence based on the original 2x2m unit planned out from the 1x1m test unit. Each 2x2m unit had two rows (A and B) and two columns (1 and 2). Unit A1 was always located in the SW corner of the 2x2 meter units. The original test unit was part of this new 2x2m unit. However, it was not always the southwest (A1) unit in the new excavation unit. Therefore, the reassigned excavation unit names for the test units in the 4x4s varied from unit to unit. TU4 is equivalent to 4B2, TU5 is 5A2, TU6 is 6B2, and

TU7 is 7C2. As these units grew organically in all directions from the 2x2m units, the final 4x4 units' letters and numbers also varied according to unit. These ranged from 0-5 and Y-D depending on the unit. Unit 4 contained rows Y-B and columns 0-3; Unit 5, A-B and 1-2; Unit 6, A-D and 1-4; and Unit 7, Z-C and 0-3 (Figure 5.18). The sequence begins at the southwest corner of the entire unit. Unit 4, for example, had columns and rows running from south (Y) to north (B) for the letters, and west (0) to east (3) for the numbers. The letters and numbers always increased in easterly or northerly directions. For example, a 1x1 located at TU location 6 might have a designation of 6B1. This unit is in the second row, first column of the SW corner of the 4x4 originally associated with Test Unit 6.

Each unit was excavated in 10cm arbitrary levels down to the silcrete base. The depths of cultural materials ranged from 40-55cm (4-6 levels) in the 4x4units, and 20 cm (2 levels) in the 1x2 along the Southern Wall. The artifacts and features characterized each area's prehistoric use, discussed in depth in the following chapter. Unit 4 was a midden, based on the presence of bone and ceramics mixed with ash and dung and its proximity to the main kraal. Unit 5 was located in the kraal, determined by the abundance of dung (whitish soil) and the stratigraphic crust located in Level 6 from when the kraal was initially established. Unit 6 was an activity area, probably near a house with its mixture of ceramics, bones, beads (some in process of preparation), and bone awl and whistle. Unit 7 uncovered a house floor and pots feature, and was therefore assumed to be a house.

Chapter 6: Initial Observations

Following is a general description of the excavation units and stone wall features involved with this dissertation field work. The stone walls were mapped, photographed, and described to give support for their hypothesized function. Artifacts and the AMS date associated with 2W2, the 2x1 meter unit along the Eastern Wall, provide chronological context to these walls. The date and function of these stone walls directly addresses one of the dissertation's research questions about the timing and nature of these walls (Chapter 5). This is discussed again in Chapter 9 in relation to the rest of the Khubu la Dintša artifact assemblage.

These initial observations about the excavation units contextualize the stratigraphic layers of the excavation units, their associated dates, identified features, and a preliminary description of the artifacts found. Chapter 7 examines many of these artifacts in depth, including the decorated ceramics, shell, metal, and glass beads, and various special finds, as well as provides background discussion of the cultural histories of these artifact types. Lithics are discussed separately in Chapter 11 along with the lithic collection found at Mmadipudi Hill. Features and a few of the artifacts, such as iron tools, and a bone awl and whistle, are described below in the context of their respective units. Ceramic sherds (N=19,459; 139,147g) were found in the excavation units along with 70,318g of animal bones, along with the ostrich eggshell beads (N=502), glass beads (N=229), and lithics (N=136). Status items such as decorated ceramics, iron tools and other metals, and glass and OES beads, are used to create an argument about the presence or absence of inequality in the Bosutswe region (Chapter 8). Elite-style houses and decorated Lose ceramics indicate the presence of elite at Khubu la Dintša.

The Stone Walls

Three stone walls were mapped Khubu la Dintša (Figure 6.1). Two of these walls run north to south along the edges of the Iron Age archaeological site. They form its eastern and western borders, with the site more or less contained in the walls. Likely prehistoric entrances through these walls were also mapped. These Iron Age accesses differ slightly from the modern wall breaks associated with the *phekolo* ceremony. These two walls, known as "Western Wall" and "Eastern Wall," were cleared of brush by the National Museum of Botswana in the 2010 pilot season in order to photograph them properly (Figure 6.2). They vary in length from sixty meters (Western Wall) to seventy meters (Eastern Wall), and collectively measure 0.95-2.2m in thickness (mean=1.7m) and 0.3-1.2m in height (mean=0.6m). This thickness is most likely associated with natural and anthropogenic rock fall, as the walls have deteriorated and collapsed through time or stones were re-appropriated for other purposes. The smaller, 0.95m measurement is probably the most accurate measure of the wall's original thickness. Similarly, the greatest height measurement (1.2m), measured at Eastern Wall, likely best represents the stone wall's original height (Figure 6.3). Eastern Wall also contained two interior extensions (3-4m in length, 1m in width) that were possibly partitions between households (Figure 6.4). The author chose this Eastern Wall for dating because its degree of intactness suggested that the natural wall face might be accessed. The rocks used in the walls' construction did not appear to be prepared or shaped in any way, nor were the walls built on prepared platforms. This contrasts with the prestige walling of Great Zimbabwe (Chapter 3), which were often coursed and laid in symbolic patterns (Huffman 2009). No Zimbabwe stylistic walling forms, characteristic of sites associated with the Zimbabwe culture, are found in the Bosutswe region, though they do occur to the northwest in the Makgadikgadi and to the east near Serule (Denbow in conversation

2013). The construction of the stone walls did not indicate associations with Great Zimbabwe in any way.

They did, however, appear defensive. As mentioned before, the Iron Age settlement was found almost exclusively between Western Wall and Eastern Wall. Only a few artifacts and grinding platforms are found beyond. The walls did not end abruptly at the site's northern and southern edges. Instead, the stone walls wrap around inward towards the central site, nearly four meters at the southern edge of Eastern Wall (Figure 6.5). Such wall extensions prevented people from scurrying around the walls' ends, suggesting that these walls were intended to limit access to the site (Figure 5.6). The hill areas in between the walls have sharp relief, making it difficult to climb up the sides directly into the settlement (Figure 6.7). In order to enter the site, one most likely had to pass through these walls' entrances.

The third wall further supports this defensive hypothesis. The third wall is located seventy-five meters further east of Eastern Wall, lining the southern edge of the Khubu la Dintša hilltop (Figure 6.8). This wall extends for sixty-three meters along a section of the hilltop that has considerably less slope than the central site's edges (Figure 6.9). It appears to have fortified this edge, limiting access to this area of the site and perhaps directing access elsewhere. The third wall is the only wall distinctly visible from the ground (Figure 6.10). On the basis of the construction and location of these three walls, it is likely that these walls were defensive in nature. They may have held some symbolic importance for defining the site and its status relative to other areas and/or other nearby sites. If nothing else, it appears the stone walls served to defend or at least limit access to Khubu la Dintša.

UNIT 2W2

Unit 2W2 was a special 2x1m unit dug along the face of Eastern Wall (Figure 6.11). This unit attempted to date the stone wall, either through diagnostic ceramics or through the obtainment of charcoal towards the base of the wall. As the stone cannot be dated directly, this charcoal, hypothetically deposited when the wall was first constructed, would serve as proxy. Eastern Wall was the least disturbed of the three; more of the original structure and natural face of this wall was also visible. A straight section with little collapse was chosen for the 2x1m unit. The unit was laid along the natural face of the wall; some surface rock debris had to be removed before excavation could begin along the wall face (Figure 5.12). Under the debris, a relatively homogenous mixture of deep brown soil and rocks of varying sizes indicated the majority of the stone and dirt movement occurred during periodic rock fall. The cultural materials were far less concentrated when compared with the other test and excavation units: 103 ceramics sherds and 132g of animal bones were uncovered, along with two lithics, a grinding stone (Figure 6.13), and an iron spear point (Figure 6.14). The iron spear point, 16cm in length, 3.2cm at its widest point with a 6.5cm stem is complete with the exception of a broken tip. The tip may have been damaged during excavation rather than during its prehistoric use. Found at 8cm in depth, the spear point is probably from the Iron Age, as it was smithed rather than molded, and had asymmetrical barbs and no noticeable notches. The spear point was found only a couple of centimeters above the two decorated ceramics that were found in the unit. One of the ceramics was characteristic Toutswe, with an appliqué band. The other, with a diagonal band of incised lines, may have been Lose or Toutswe (Chapter 7). The AMS date, therefore, provided a more precise date. The cultural materials ended in Level 2, likely contemporaneous with the stone wall's construction. An AMS from 2W2 A1 Level 2 provided a date of 580±30 (Beta 329079, charred material) and possible calibrated age ranges of cal AD 1300-1360 and cal AD 1380-1420 (calibrated at 2δ). This construction would have occurred in the Middle Lose period, either soon after Mapungubwe's collapse and the rise of Great Zimbabwe.

UNIT 4

Unit 4, located west of and immediately adjacent to a wooden structure constructed by the *phekolo* church, appeared to be part of the central midden of the settlement (Figure 6.15). Very little topsoil was present in Unit 4. Artifacts were concentrated mostly in the top 20cm, indicating dual processes of erosion and deflation. Compact grey and white ashy dung was present in Level 2 in the southwest units (Units 4A0, 4B0, 4Y0, 4Y2, and 4Y3) (Figure 6.16). Glass beads, shell beads, Lose and Toutswe ceramics, and faunal remains were found (Chapter 6). 4Z3 Level 2 contained a cut-marked bone and a large bovid jaw with five intact molars. Black ash and multiple burnt animal bones found throughout suggest that this area was part of a central midden. Various animal remains were noted: Unit 4Z1 Level 1, a small carnivore jaw with intact teeth, along with numerous fish bones; Unit 4A0 Level 2, two intact pieces of animal dung, one cow and one goat/sheep. The dung was separately bagged and curated at the National Museum of Botswana. Other special finds associated with this unit include: a partial tortoise shell (Unit 4Z1 Level 1), an iron blade which had been broken into three pieces (Unit 4A0 Level 3), and two utilized polishing stones (Unit 4B3 Level 3 and Unit 4Y1 Level 1). Level 4 was only significant (i.e., containing more than a few sherds, bones, beads, etc.) in Unit 4B3, where thirty-four ceramic sherds (178g) and 264g of bone fragments were found.

Stratigraphic layers were subtle and best seen in sketches of the vertical wall faces (Figure 6.17). The western wall of the unit provided a particularly good snapshot of the cultural layers: a light gray top soil, which continued 10-20cm in depth; under which was an ashy-grayish white layer, about 10cm in depth that comprised Level 3 and parts of Levels 2 and 4; followed by a reddish-brown gravel-filled soil which was most likely a product of the disintegrating bedrock in Level 4. Towards the central part of the western wall there was a shallow pit bordered by the bedrock on one side and a large stone on the other in which a pocket of deep grayish-brown soil was present. The north wall contained similar stratigraphy but also had another lens or pit that widened to 20cm in the southwest corner of the unit. The gray-ashy soil, occasional charcoal bits, dung, various bones and ceramic sherds, and the small pits visible in the walls suggest this area was a refuse pit, reused repeatedly throughout Khubu la Dintša's occupation.

Six soil samples from various unit/levels were collected and are curated at the National Museum of Botswana. Charcoal collected from Unit 4Z2, Level 2 was chosen for radiocarbon analysis due to the high volume of artifacts found within the level and its proximity to the ashy-grey midden layer. It dated to 630±30 (Beta 329080, charred material), providing two possible calibrated age ranges of cal AD 1280-1330 and cal AD1340-1400 (calibrated at 2δ), dates consistent with the Middle Lose period. Ceramic and glass beads help to further define the occupation period of this area of the settlement (below and Chapter 7).

UNIT 6

Unit 6 had more topsoil than Unit 4, with 2-3cm accumulated over the cultural layers (Figure 6.18). Artifact concentration in this unit was spread more evenly among the first three levels than in Unit 4. Sketches of the western and northern walls indicate four general stratigraphic layers: 10-15cm of grey soil throughout the unit, with a few shallow pits in the western wall 5-10cm deep that extended into the layers below and may have contained a stone grain bin feature; followed by one of two terminal layers: 10-15cm of gray-ashy soil on top of a layer of light gray soil and reddish lens, or brownish-gray soil that continued to bedrock (Figure 6.19). Two variations of metal beads – longer, cane-like beads and shorter, rounder beads were noted. These are discussed in Chapter 7. Level 2 of Units 6A3, 6A4, 6B3, and 6B4 contained a small, ashy midden; a soil sample was taken. Various artifacts commonly associated with household activities were found throughout the unit: Unit 6B4 Level 2, a bone awl 9cm in length (Figure 6.20) and a small iron piece; Unit 6A2 Level 2, a utilized stone; in Unit 6A2 Level 1, a bone whistle 5.4cm long and 1cm wide carved from a hollow bird bone (Figure 6.21) was found along with lithics, decorated pottery (including Lose-style punctates), and two copper beads. The number of metal beads found in this excavation unit is particularly curious. Unit 6C3 contained seven metal beads in all its levels, and many others contained at least four metal beads. This concentration of metal beads, higher than anywhere else on Khubu la Dintša, is discussed further in Chapter 7. One hundred seventy-six lithics and ecofacts were found. These are discussed further in Chapter 11. Faunal remains were present here in this unit; Unit 6D2 Level 2 contained large bones, including two pieces of a medium-size jaw (Figure 6.22). A large grain bin was also visible in the western wall. A twisted piece of iron and ten pieces of slag were found, indicating that some iron working may have been conducted in this area. Considered along with the number of metal beads, glass beads, slag, and such special finds as the bone awl, utilized stone, and bone whistle, this area was likely an activity area, probably associated with a house. A date was taken from Unit 6B3, Level 1 – the same level that contained the bird bone, Lose ceramics, and copper beads – returned a radiocarbon date of 670±30 (Beta 329082, charred material), and a calibrated age range of cal AD 1220-1280 (calibrated at 2δ). This places the site in the Early Lose period, and it potentially extends back even further before Early Lose depending on the length of occupation and rate of accumulation of the cultural material. Further dating of other layers, not possible within the scope of this dissertation budget, could easily address this question.

UNIT 7

Unit 7 contained a house floor, two pot features, an iron tool, and the highest concentration of glass and shell beads of all the units (Figure 6.23). The profile of the southern wall (Figure 6.24) indicated brownish-gray topsoil for the first 10-15cm that extended to 20cm in parts of the unit. In the western portion of the unit, this layer sloped down, perhaps as a pit, to 30cm in depth. Below this stratigraphic layer, which began in Level 2 in some areas, was a light ashy-gray soil. The house floor, made from reddish-brown soil, was contemporaneous with this layer. The top of the floor was visible at the end of Level 2 but located primarily in Level 3. The house floor was visible in the easternmost 75cm of the south wall. The western wall also contained the house floor. Ten centimeters of the ashy soil fill underneath the floor suggest the floor may have been prepared, although it could have been built over an earlier ash midden instead. Fifty centimeters beyond the house floor, the contemporaneous ashy-gray layer continued. A brownish-gray soil layer extended down to the end of Level 3, and in areas intrudes into Level 4. This pattern was similar to the south wall. Here as well, a light grayish layer extended horizontally from the house floor, continuing for 2.5 meters. In both the south and west walls, a reddish-brown soil lens occurred below the house in Levels 4 and 5. Reddish-brown gravel, similar in color to the silcrete base below, composed the final 10-15cm of the cultural layers in the unit.

The house floor was first discovered in Unit 7B2 L2 in the west and southwest portion of the unit (Figure 6.25). The floor extended into the southeast quadrant of Unit

7B1 Level 2, which also contained burned daga, a gravel floor, and, in the southwest corner, stacked pots. This stacked pots feature continued in Unit 7A1, Level 2, and was surrounded by a half-circular ring of stone 35cm by 45cm across (Figure 6.26). There was no floor under the stones; however, its partial, degrading foundation implies one existed in the past. The pots in this feature were undecorated. The house floor continued in the northeast quadrant of Unit 7A1 and the western half of Unit 7A2, where, as in Unit 7B2, the floor disintegrated and was indistinguishable from the rest of the matrix. The floor did have an intact edge that suggested it was circular and approximately three meters in diameter. Another section of floor was found disconnected from this main section in the southwest corner of Unit 7Z0. This other part of the floor was 80cm in length and 50cm in width. A compact white ash lens (sample taken), 10cm in diameter, lay next to this floor. The house floor appeared to be made from reddish-brown gravel that was possibly burnt (Figures 6.27-6.28). The soil located under the floor contained both black soil and white ash patches. Samples were taken on the house floor, outside of the floor, and immediately below the floor in these ash patches. Adjacent to the floor was white ashy soil mixed with pieces of charcoal and ash and occasionally daga. Orange-red daga was found in Level 2 (N=20) and underneath the house floor in Levels 3 (N=39), 4 (N= 28), and 5 in one unit (7A3, N=42). In fact, the majority of the Level 4 and 5 materials were discovered in Unit 7A3. Unit 7A3 was located 1.5m east of the floor but may have been part of the original house or where the house walls collapsed. Alternatively, it may have been the location of an earlier house. Like Unit 6, Unit 7 contained some faunal remains but less than Unit 4. Small rodent bones were bagged from the southeast corner of 7A3, Level 2. A large jaw with teeth was found in 7A0 Level 4 (Figure 6.29).

Significant artifact concentrations continued underneath the house floor, suggesting that either the area continuously functioned as a household area or an ash midden. Unit 7B0 Level 3 contained a grinding stone; Unit 7B2 Level 4 contained a possible grain bin foundation 50-60cm in diameter that would have continued in the unit located directly to its east. Another feature that contained ceramic sherds in ash and charcoal matrix was located in Unit 7Z3 Level 3 (Figure 6.30). This feature was 20cm by 25cm in size, was located 20-40cm west from the northeast corner and 25-50cm south from the northeast corner, and had a depth of 28cm. The highest concentration of ceramic sherds (N=306) and bones (928g) was found in this unit/level, along with 85 small iron fragments belonging to the same iron tool, perhaps a hoe (Figure 6.31). The largest of these pieces was 6.3cm by 7.0cm in size. Four glass beads (turquoise, black, and white), seven broken and full ostrich eggshell beads, and one decorated ceramic sherd were found; these are discussed further in tandem with the rest of the unit's materials in Chapter 7. Ash samples were also taken and stored at the National Museum of Botswana.

Prestige items were found throughout this unit. Unit 7Z0 Level 3 contained over twenty OES beads in an ash lens located in the central west portion of the unit. Level 3 from Units 7Z1 and 7Z2 contained red beads, the only area of the site to have that color (Chapter 7). 7Z3 Level 4 contained a single yellow-orange bead.

A radiocarbon date from Unit 7A1 Level 3, located immediately underneath the house floor, dated the house and the unit to 570±30 (Beta 329084, charred material) with two possible age ranges of cal AD 1300-1370 and cal AD 1380-1410 (calibrated at 2δ). This unit/level also contained a grinding stone and multiple yellow, turquoise, and red glass beads. These dates place the Unit 7 house in the Middle Lose period. This unit would be contemporaneous with the midden in Unit 4 and the Eastern Wall.

UNIT 5

Unit 5 was placed on a slight slope in the kraal area (Figure 6.32). Thus, the first level was 3-8cm shallower in eastern and southern portions of the unit. This unit contained the deepest amount of cultural material, extending down to 55-60cm in depth (Figure 6.33). The first stratigraphic layer was comprosed of gray soil that continued to 15-20cm in depth. Two pits were visible in the northern wall. These pits were 10-20cm in width and extended to 42cm in depth. Below this layer, compact, orangish-gray subsoil continued to 35-40cm in depth. A light gray soil dominated the layer below this, 35-50cm in one level, and up to 20cm in depth in the southern wall. In the western 50cm of the southern wall, this cultural layer did not exist; rather, it was brownish-gray soil, perhaps indicating the edge of the kraal. The final 10cm of the unit contained grayish gravel, including larger stone inclusions, until bedrock was hit around 55-60cm from the datum. Crusted lines of animal dung along the wall were indicative of the periods in which the kraal was first used. As mentioned earlier, this unit was only extended to a 2x2m unit due to budget and time constraints. However, low concentrations of household items such as beads and ceramics were still noticeable. Unlike the other excavation units, the highest concentration of ceramics and bones in Unit 5 occurred in Level 5: 53.98% of the ceramics came from this level, five times the amount of most the other levels; 65.29% of the bones from Unit 5 came from Level 5 as well. The twelve decorated ceramics from Level 5 are described in Chapter 7, and in Chapter 8 the few but important glass beads are analyzed. A charcoal sample was taken from this level in Unit 5B1 provided an AMS date of 690±30 (Beta 329081, charred material) and two calibrated age ranges of cal AD 1270-1300 and cal AD 1360-1380 (calibrated at 2δ). Based on the artifact assemblage, however, this unit likely dates to a slightly earlier period (Chapter 6). The radiocarbon date may also relate to the bottom of one of the later pits and correspond to that top stratigraphic layer.

Whether the kraal itself was used throughout the occupation, or if it was associated with a small, earlier Toutswe settlement remains to be determined. Unit 5 was the deepest of all the excavation units. Seventeen decorated ceramics were found, but only two could be identified; these were Toutswe-style ceramics (Chapter 7). However, Toutswe-style ceramics are mixed with Lose ceramics throughout the site; this does not necessarily determine whether the kraal was a Toutswe or Lose period event (Chapter 7). Indeed, seven glass beads were found and when one was analyzed, it was associated with the Early Lose period (Chapter 8). The radiocarbon date above indicates that part of the kraal may have been Middle Lose, although this may be a later pit dug into the earlier kraal. The evidence above, does point to the kraal being used for some if not all of the Lose period occupation. Further expansion of this unit and additional radiocarbon dates should help address this issue.

Chapter Seven: Artifact Analysis

The descriptions below include decorated Lose and Toutswe ceramics; glass, shell, and metal beads; and cowry shells from Khubu la Dintša. These artifacts help to demonstrate Khubu la Dintša's relative status in comparison to Bosutswe. Social ties are implied through the exchange of Lose ceramics, which would have included trade, marriage, or alliances. Ceramics are one of multiple lines of evidence that suggest connections between Khubu la Dintša and Bosutswe transcended pure economic relationships. Glass beads and metal beads found in household areas indicate a prestige goods economy, where accumulation of these goods may have been used to indicate personal status. Although at times the quantity of prestige goods at Khubu la Dintša is less than at Bosutswe, the proportions of items such as glass and metal beads suggest that the site was indeed quite important in the Bosutswe region. In Chapter 9, the artifacts discussed in this chapter are combined with the general site observations made in Chapter 6 to address the research questions involved in this dissertation.

CERAMICS

Stylistic differences in ceramics have served to differentiate and classify cultural groups in the southern African Iron Age (Huffman 1974, 1980, 2007; Robinson 1959, 1965, 1966). Ceramics have been essential both for defining and seriating Iron Age periods and cultural groups (Huffman 1974, 2007). Critiques of these categorization methods claim the broad categories that were developed mask internal differentiation within groups (Calabrese 2005; Denbow 1982, 1983, 1986; Schoeman 2006). These critiques and their validity will not be directly addressed below. Rather, the general categorization of ceramics from Khubu la Dintša focused on those styles relevant to the Bosutswe region and their proper identification. In particular, Lose-style ceramics are highlighted. Lose-style ceramics are associated with the emerging elite class at Bosutswe, where they are found exclusively at residences with high numbers of status goods (Denbow et al. 2008, Denbow and Miller 2007). Similarly, architecture differentiates Lose houses from the rest of the settlement. Lose-style ceramics are one part of the cultural component of the Toutswe people in the Bosutswe region, a stylistic difference that indicates status. The Lose identity likely developed in the Bosutswe region from interaction between the local Toutswe people and a few, perhaps incoming, Mapungubwe familties. Over time, Lose-style and Toutswe-style ceramics became part of the same social formation, rather than a juxtaposition of two different "groups" or "traditions." By carefully documenting the Lose ceramics, their presence at the site is emphasized. Toutswe ceramics and several imported ceramics were also observed. It does appear that a small Toutswe cattle post peoples may have been the initial settlement. However, it was difficult to determine whether the Toutswe and Lose ceramics were later contemporaneous with one another, or whether these were disturbed, mixed layers from two separate occupations: a small Toutswe settlement that was followed by a Lose occupation. Implications for both are discussed below.

Associated with the earliest complex societies are the Zhizo and Taukome ceramics styles, as they are referred to in South Africa (Huffman 2007) and Botswana (Denbow 1982, 1983, 1986), respectively. These ceramic styles were named after the corresponding Iron Age polities in which the centers of the ceramic styles were based (Chapter 3). Taukome ceramics were originally considered separate from Zhizo-style ceramics, until Denbow (1982, 1983, 1986) demonstrated an 84% overlap between the styles. Taukome ceramics are now seen as a regional variant of the same cultural group. As Taukome was the local (Botswana) variation of this style, ceramics found in the Bosutswe region are likewise referred to as Taukome ceramics. Variations on

Zhizo/Taukome ceramics include combstamping around the neck, single or multiple bands with borders along the lower rims, or simple triangles on the shoulder of the vessel (Calabrese 2005; Huffman 1974:100, 2007) (Figure 7.1).

Toutswe ceramics were present in the Bosutswe region after 900 AD. Like Taukome ceramics, Toutswe ceramics were named after the site at which the style was first identified (Chapter 3). The Toutswe tradition appears to be a local stylistic change from Taukome to Toutswe ceramic wares around the 11th century (Denbow 1982, 1983, 1986; Huffman 1974, 1978). Decorated ceramics indicate this general transition, as beakers found in Taukome levels that look similar to Toutswe ceramics gradually became more and more common (Denbow 1982, 1983, 1986). Toutswe decorations include incised diagonal bands and combstamping and bead-bangle impressions similar to but smaller that on Taukome ceramics (Figure 7.2). The latter are commonly found in the lower neck of vessels. Another strong indicator for Toutswe ceramics are raised appliqué bands at the neck and shoulder junction that are combstamped or impressed by bangles.

Lose ceramics first appeared at Bosutswe around the 13th century, and appear contemporaneous with the rise of Mapungubwe. Lose ceramics are a locally produced stylistic mimic of Mapungubwe ceramics from the east. The "Lose" name originated from a site 26 km north of the present-day town of Mahalapye where they were first identified (Kiyaga-Mulindwa 1990) (Chapter 4). Prior to the excavations (see below), Lose ceramics had been identified at only two locales: Lose and Bosutswe. At Bosutswe, Lose ceramics distinguished the developing elite class from commoners, who may have retained use of Toutswe ceramics (Denbow and Miller 2007, Denbow et al. 2008; Chapter 3); at Lose, they were not associated with many luxury goods such as glass beads. The date for Early Lose ceramics at Bosutswe also coincides with a date for Toutswe-style ceramics from a burned house. It suggests there was some cultural continuity or overlap between these two ceramic traditions. Lose ceramics likely incorporated the adaptation of external symbols – Mapungubwe styles – to distinguish elite from non-elite members of the society. Described only in brief in earlier works, these ceramics are most easily identified by their punctate decor, which often fills bands of interlocking spaced triangles (Denbow and Miller 2007, Denbow et al. 2008, Huffman 2007, Kiyaga-Mulindwa 1990) (Figure 7.3).

The ceramics collection from Khubu la Dintša

The excavations at Khubu la Dintša yielded 20,812 ceramic sherds from both the test units and the excavation units. Rim and/or decorated sherds numbered eight hundred and fifteen. No complete vessels were found, and many of the sherds were too fragmented to estimate the curvature of the rim and diameter of the vessel. Rims are not described extensively below, in favor of focus on decorations, although they were often straight or curved outward. A few exceptions were noted and described here to document their variation (Figure 7.4). A tapered, inward-slanting rim was found in Unit 4A0 Level 1. Another tapered rim was found in Unit 7C1 Level 3 that had a flat top and a distinct shoulder ledge. A wide, relatively flat rim from Unit 4Y2 Level 1 slanted slightly outward and had thick walls. These thick walls made up the sides of a shallow, thick bowl, for which the base was also discovered; this bowl is common in Toutswe assemblages. A similar bowl was found at Mmadipudi Hill (Chapter 10).

There were one hundred sixty-five decorated ceramic sherds, approximately 0.8% of the total ceramics assemblage (Tables 7.1 and 7.2). Toutswe and Lose ceramics were identified in the assemblage; a few imports were also found. As the sherds were only fragments of vessels, the entire decoration sequence of a pot could not be considered. Because of this, separation into "Lose" and "Toutswe" categories was conducted conservatively. Only the decorated sherds that were unique to Lose or Toutswe ceramics were put in either category; anything potentially ambiguous was categorized as indeterminate. Even with an underrepresentation of Lose and Toutswe ceramics, it is recognized that Lose and Toutswe ceramics were definitely present at Khubu la Dintša and that Lose ceramics composed a significant part of the decorated ceramic assemblage. Ceramic decoration at Khubu la Dintša included incised lines, comb stamping, punctates, and burnished sherds. Forms of these decors were lines, bands, wavy bands, and triangles (Table 7.1). Fourteen groupings of similar kinds of decoration were used to initially sort the sherds, iterations of the combinations above. Ceramic types were determined for each of these groupings (e.g. Toutswe, Lose, Import; Table 7.2). Most of these decorated ceramics were indeterminate, as the sherd size was either too small to determine the whole decoration motif or how the original vessel was shaped, or the decoration was generic enough that it might be associated with a number of ceramic traditions. However, over a third of the ceramics were categorized; these were Toutswe, Lose, and Imported sherds (Table 7.2).

Due to varying sizes and degrees of fragmentations and wear, many of the sherds could not be classified by the author. Indeed, the most frequent "decoration" found on the ceramic sherds was a single incised line (N=61). As incised lines are very common and may be a part of a larger decoration motif, their cultural affiliation was unknown. Other ambiguous decorations included perpendicular short lines (N=5), diagonal incised lines (N=16), double parallel incised lines (N=14), and multiple incised lines closely spaced together (N=8). These may be either Toutswe or Lose ceramics, depending on their location on the ceramic vessel and the shape of that vessel, neither of which could be determined. Although photographed, these sherds were not considered for either category (Figure 7.5). Sixty percent of the decorated sherds were unclassified. The paste and technique of making these ceramic vessels appear to be identical (or nearly so), as they come from the same ceramic tradition.

Forty-two sherds were Lose-style ceramics (Figure 7.5, Table 7.2). The most frequent Lose decoration found was incised triangles filled with punctates (N=14), identified in four different test and excavation units (Units 4, 6, and 7; Test Unit 9). Punctates were also found to fill straight, v-shaped, or wavy bands (N=7). Several had incised, interlocking triangles, but were not filled (N=11). These unfilled triangle sherds were found primarily on the eastern half of the site, including the relatively shallow (>20cm) Test Units 1 and 2. Other Lose decorations included short, perpendicular dashes that fill incised triangles (N=9) or a wavy band (N=1). These Lose ceramics, when considered as a whole, represented 25.5% of the total decorated ceramic assemblage.

Lose-style ceramics occurred with varying degrees of frequency and distribution in the test and excavation units (Figures 7.6-7.7). Concentration in the upper levels of the site suggests that these may be later affiliations or even occupations at the site. Lose sherds were found throughout the site, including three of the four excavation units (Figure 7.7). Units 6 and 7 contained the most Lose-style ceramics, with twelve and sixteen Lose sherds, respectively. In Unit 6, these were primarily concentrated in the latest level (Level 1) of the unit, although Lose ceramics were found in every level. Unit 7 had most Lose ceramics concentrated in Level 2 (N=11), immediately above the house floor, although two were also found in earlier levels (Figure 7.10). Unit 5 was the only excavation unit without Lose ceramics. Lose ceramics were found in the test units located in the eroded areas of the hilltop (Test Units 1, 2, 9, and 10), implying that although these cultural deposits were subject to post-depositional processes, the full extent of the area between the two stone walls was utilized during the Lose period. Three decorated Lose sherds found in Test Unit 8 suggest that if it was a household area, as suggested in

Chapter 6, that it likely dated to the Lose period. Almost all of the imported sherds (N=12 of 13) were found alongside Lose sherds.

These Lose ceramics were found alongside concentrations of glass and metal beads (described later this chapter). These beads were also found in levels preceding ones that include Lose ceramics, and it is possible that these luxury goods came prior to the stronger cultural affiliations with the Lose elite at Bosutswe. However, this scenario is speculative at best. At the very least, there appeared to be a link between Khubu la Dintša and the Lose elite at Bosutswe. Khubu la Dintša must have played a sufficiently important role in the Bosutswe region to warrant these Lose affiliations.

Other ceramics were characteristic Toutswe (Figure 7.8). These included sherds with raised appliqué bands (N=1), comb stamping (N=8), and thick bands filled with diagonal incised lines (N=2). The eleven Toutswe ceramics comprised 6.7% of the total decorated ceramic assemblage. Toutswe sherds were found in all four of the major excavation units and as well as the 2W2 unit. The only two sherds that were identified in Unit 5 belonged to the Toutswe ceramic tradition; the rest (N=16) were indeterminate. As mentioned in Chapter 6, I suspect that this unit and the establishment of the associated kraal are older than the radiocarbon indicated. This is both a product of the Mapungubwe wound bead found in the unit as well as these Toutswe ceramics. As mentioned above, no Lose ceramics were found in this unit. Whether the initial occupation as a small or part-time cattle post for Toutswe-using people continued through the Early and Middle Lose period remains to be determined.

There is mixture in many of the other excavation units of Toutswe and Lose ceramics (Table 7.2). The highest number of Toutswe ceramics identified (N=4) was located in Unit 6 Level 1, both contemporaneous with and on top of Lose-style ceramics found at deeper, earlier levels in the unit. A Toutswe ceramic was contemporaneous with a Lose ceramic in Unit 7 Level 1, the same in Level 4. However, these sherds were too few and the deposits too shallow to definitively determine whether these relate to the same event. Interestingly, some of the units and levels that contained Toutswe ceramics also dated to the Middle Lose period. In the 2W2 wall unit, for example, one sherd was found approximately 2cm deeper than the iron spear point described in Chapter 6, contemporaneous with a Middle Lose date. Four Toutswe sherds were found in the level after the Early Lose date in Unit 6, and Unit 7 dated to the Middle Lose period.

A number of possibilities could account for contemporaneous Toutswe and Lose ceramics: 1) there may have been cohabitation between Toutswe-using and Lose-using peoples; 2) the same population used both types of ceramics; or 3) these few sherds just indicated intrusions into earlier levels at the site. If cohabitation was occurring, this may mean a parallel hierarchy of Lose elite and non-elite, Toutswe-using people existed. This would indicate the same processes of class-based inequality occurred the hinterland (Chapter 9). Alternatively, the Bosutswe elite may have joined a Toutswe community, but lived separately. If the same people used both ceramic types through the Middle Lose period, the mixture of Lose and Toutswe ceramics may indicate alliances and marriages between the inhabitants of Khubu la Dintša and Bosutswe. If these Toutswe and Lose ceramics were related to different occupations at Khubu la Dintša, then the main occupation was likely associated with a Bosutswe elite who came to the site in the Middle Lose period, either to manage animal herds or to take shelter during a period of regional instability (Chapter 9). More excavation units in the future would provide more decorated ceramics and better address this question.

One sherd from TU2 Level 2 was identified as Late Lose, from post-1450 AD (Denbow in conversation 2013; Figure 7.9). This sherd was highly burnished with decoration of incised triangles with fill that alternated between unfilled space and diagonal bands filled with fine perpendicular lines. It is possible that the site was lightly used after its main occupation in the Middle Lose period; this sherd indicates a later intrusion at the site.

Additionally, twelve imported ceramics were identified due to their unusual clay, decoration, or degree of burnishing (Huffman 2007; Figure 7.10). Eleven of the twelve were identified successfully. Unit 7A3 Level 1 contained an Eiland sherd, identified by its band of wheat-like incised "v" lines oriented 90 degrees from the band. As an Eiland sherd, it suggests mixing of the cultural deposit with levels. Five sherds were Transitional K2. Four of these sherds were from one pot in Unit 7A1, Level 1, and had a band of short, incised parallel lines that formed a band near its rim. The fifth sherd from Unit 6D3 Level 2 was an incised triangle filled with diagonal parallel lines. Five sherds, potentially from Mapungubwe, were identified from two units: Units 7A2 Level 4 and 6D3 Level 2. These sherds are highly burnished. One other sherd was classified as an import but was unidentified. This sherd, from Unit 6D3 Level 4, is reddish brown in color, and contains incised triangles that are filled with pin-sized punctates bordered by double parallel horizontal lines that alternated with diagonal lines. It may come from Mapungubwe, but this also remains a conjecture.

SPECIAL FINDS

Two cowry shells found at Khubu la Dintša also deserve special mention (Figure 7.11). Both shells were broken in half; the other halves were not found in either of the excavation units. The first was found in Unit 6D3, Level 3. The other was located in Unit 7A2, Level 4.

Unit 6D3, Level 3 had ten glass and shell beads – one yellow glass bead, six OES beads, two broken OES beads, one roughened OES bead – and nine pieces of ostrich eggshell. Two small piece of slag, weighing 2g in total, were also found contemporaneous with the cowry shell, and two decorated ceramics were also found in the level. One of the decorated sherds was difficult to classify due to its simple (i.e. culturally unidentifiable) design and the degree of degradation. The other decorated sherd was imported (Figure 7.12). As mentioned above, this sherd had double incised lines outlining the bottom of a triangle with multiple incised lines that ran parallel to the triangle's hypotenuse. Incised punctates decorated the inside of the triangle.

Unit 7A2 Level 4 also contained half of one cowry shell. Unit 7A2 Level 4 is found below the house. One transparent-translucent lemon yellow (10.0Y 8/10) glass bead was found with the shell, measuring 1.8mm in length and 3.42mm in width. Thirteen glass beads were found in the two units to the west and southwest of this unit: 7A1 L4 (N=4) and 7Z1 L4 (N=9). These beads were primarily yellow, although turquoise, blue-green, black, and red were also represented.

Other artifacts present in the Unit 7A2 Level 4 were two OES beads, one broken OES bead, and three imported decorated sherds likely from the same pot (Figure 7.13). As mentioned earlier, these sherds were dark in color, highly burnished, and finely decorated. No other ceramics of this type were found at Khubu la Dintša. Two parallel bands ran parallel to each other, and very fine incised punctates decorated each of the bands. One possibility is that the sherd came from Great Zimbabwe. This, however, remains for later classification.

Beads: Glass, Metal, and Shell

Over one thousand beads were excavated at Khubu la Dintša (N=1,376), including ostrich eggshell in various stages of preparation, shell and stone beads, iron metal beads, and abundant glass trade beads. Location (unit/level), count, and color (for the glass beads only) were recorded for the beads. Beads are a marker of individual status, which became especially important during the Lose period. The analysis of these beads, their distribution, and how those concentrations compare to Bosutswe are discussed in the remainder of this chapter. Count and location of beads at Bosutswe provide an important point of comparison with regards to these bead concentrations at Khubu la Dintša and how they vary through time and across space. OES beads, metal beads, and glass beads from Bosutswe are compared to the Khubu la Dintša assemblage.

There were two hundred twenty-nine glass beads that came from the Indian Ocean exchange network. This large number of high status trade goods at a hinterland site such as Khubu la Dintša prompted extensive analysis. When this concentration was standardized by volume and compared to Bosutswe, these concentrations were up to three times higher than the main polity site. Because of this surprising discovery, twenty-four of the glass beads undergo a second macroscopic and chemical analysis in Chapter 8. Below, the count, distribution, and color of glass beads are discussed.

Shell and metal beads are also included below. Shell beads were made primarily from ostrich eggshell. Some of these were still in stages of production. Other types of shell beads made from mussels and land snails were also found. Of the forty-six metal beads found at Khubu la Dintša, fourteen were copper or perhaps bronze. The rest were iron. These were concentrated primarily near household areas, particularly at Unit 6. The historical background and general description of their manufacture are included below for each bead type.

Glass Beads

During the Iron Age, glass beads were traded as commodities around the Indian Ocean, traveling from the Middle East and south and southeast Asia to the interior of

Africa (Figure 7.14). A multitude of events, people, and political forces influenced the production and distribution of the types and colors of glass beads, including actors such as glass bead manufacturers, trade merchants, and the African consumers (Robertshaw et al. 2010:1911, Wood 2005). Glass beads were traded as prestige goods, valuable as a prestige good as well as their ability to be traded for other status items such as cattle. These glass beads are invaluable for retracing trade routes in the African interior. Although Arab, Chinese, and Portuguese documents described the lands with which they traded for gold, the actual geographic locations often were lacking, leaving most of the continent, especially the interior, unknown.

Glass beads found in southern Africa were manufactured in one of three ways: drawn, wound, or molded. Wood (2005:28-29, 2011:68-69) describes this process:

> Drawn beads are made by creating a hollow in a gather of molten glass either through blowing a bubble in it or perforating it with a tool. Tubes are cut into bead lengths, the ends often reheated in order to round the beads. Wound beads were made with a technique known as furnace winding, when the bead maker digs a mandrel into melted glass contained in a crucible and winds the glass thread around the mandrel until glass size is reached. Beads may be rolled or paddled into the desired shape. The only molded beads in the southern Africa Iron Age were called Garden Roller beads, made from imported glass beads that were ground up, heated, and molded into a singular larger bead. This process required lower temperatures than the original manufacture of the beads. Conducted at the K2 and Mapungubwe polities, it is the only local (e.g. African) type of glass bead production in the southern African Iron Age.

A glass bead sequence for southern Africa has been established for southern Africa through macroscopic classification (Wood 2000, 2005, 2011). Wood (2011) conducted an extensive study of the Indian Ocean beads found at southern African Iron Age sites, analyzing over 16,000 beads from twenty-eight sites from Botswana, South Africa, Zimbabwe, Mozambique, Zambia, Tanzania, and Madagascar. The largest polities in the area – K2, Mapungubwe, Great Zimbabwe, and Khami – were included in the analysis, as well as forty-two beads from Bosutswe. Classification related to either the major African regional polity during a particular period, and/or a period when the bead source changed. Some of these categories can be differentiated macroscopically by differences (or at least trends) in color and size. These categories include: Zhizo, K2 Indo-Pacific, Garden Roller, East Coast Indo-Pacific, Mapungubwe Oblate, Zimbabwe, and Khami Indo-Pacific (Figure 7.15). As mentioned above, a number of the glass beads in Wood's (2011) analysis came from Bosutswe itself; these beads were also used in a chemical analysis conducted by Robertshaw et al. (2010). These Bosutswe beads included Zhizo series beads (N=6), Garden Roller (N=2), Mapungubwe Oblate (N=15), and Khami Indo-Pacific (N=19). No Zimbabwe series beads were identified in their analyses. Although this absence may be due to a sample size or selection, it is noteworthy, particularly in light of the chemical results discussed in Chapter 8.

The earliest known glass beads in southern Africa, located at Chibuene in Mozambique, date to the 7th and 8th centuries. Zhizo series beads, the first glass beads found in Botswana, date to the 8th-10th centuries AD. These were primarily blue and blue-green plant ash beads from the Middle East, most likely from Iran (Robertshaw et al. 2010, Wood 2011). K2 and K2 garden roller Indo-Pacific beads (980 AD to 1200 AD) are made from high alumina-mineral-soda glass, south Asian in origin. The unique signature of these K2 Indo-Pacific beads, blue-green and green in color, differs from glass beads found in eastern Africa at this period. Southern Africa was likely trading directly with south Asia at this time (Wood 2011). East Coast Indo-Pacific beads likely came from another source in southern Asia after filtering through the east coast of Africa. Some East Coast Indo-Pacific beads are translucent – yellow, orange, green, and blue-green – and others are opaque – reddish-brown and black. East Coast Indo-Pacific beads were present for longer than K2 Indo-Pacific beads into the early part of the

Mapungubwe sequence (Wood 2005:143-144, 2011:76). A major shift from high alumina-mineral soda beads to plant-ash beads with high amounts of aluminum and lower amount of calcium occurred in the second quarter of the 13th century. This shift coincided with the rise of Mapungubwe, and continued through the Zimbabwe period; hence, it encompasses both the Mapungubwe Oblate and Zimbabwe series beads. These beads may have come from a different source in south India, or come from central Asia or the Middle East; their provenance remains unknown (Dussubieux in conversation 2013; Robertshaw et al. 2010:1907, 1910; Shibille 2011). The Khami bead series (1450 AD-17th century) were made from high alumina-mineral-soda glass. Khami beads are distinguished from earlier high alumina-mineral-soda glass beads by the presence of cobalt, which was used as a colorant, and greater quantities of sodium, magnesium, and uranium (Robertshaw et al. 2010:1907, 1910-1911).

The glass beads collection from Khubu la Dintša

A total of 232 glass beads were found at Khubu la Dintša. Of these, 229 were Iron Age glass beads (Figure 7.16). A macroscopic and chemical analysis of a subset of twenty-four beads, discussed in Chapter 8, placed all but one in the Mapungubwe Oblate or Zimbabwe series (likely the former); the last was classified as Indo-Pacific, either East Coast Indo-Pacific or Khami (likely the former). Three modern black and white beads were found and excluded from analysis. These modern beads were distinguished by their large size, smooth appearance, and glossy exterior, which were vastly different from the older Indian Ocean glass beads. All three of these beads were located in either the surface cleaning of the unit preparation or within the first few centimeters of the first level of excavation. These modern beads are most likely associated with the *phekolo* ceremony that was held on the KLD hilltop from the mid-1990's to the early 2000's. Elsewhere on the site, other modern glass beads associated with this ceremony were noted. A string of modern black glass beads was found and left about twenty meters north of Unit 4; white beads with a blue stripe running through the middle were found as an offering in an earthen basin outside the man-made cave associated with the *phekolo* ceremony (Chapters 8 and 13). Additionally, one yellow Iron Age glass bead was found on the surface in Unit 4A2. It has been kept in the overall analysis, but excluded from a level-by-level analysis of the units.

A third of the unit/levels (34.0%; N=96 of 282) contained one or more beads. Two-thirds of those unit/levels (N=66) contained one or two beads (Figure 7.17). The number of glass beads per unit/level ranged from 0-11. Figures 7.18 and 7.19 shows the distribution of beads by units and levels. Glass beads were abundant throughout the occupation of Khubu la Dintša. The presence of glass beads in all units and in many of the levels reinforces this contention. Unit 4 had the most uneven distribution of glass beads, and twenty-eight of the forty-three beads were found in Level 1. Most of the beads in Unit 7 were found contemporaneous with the house: 8.1% (N=7) were found in Level 1, 20.9% were found in Level 2 (N=18), 47.7% in Level 3 (N=41), and 17.4% in Level 4 (N=15). Units 5 and 6 had a more dispersed distribution of their beads. For example, glass beads were found consistently throughout the first three levels of Unit 6: 21.5% (N=14) in Level 1, 32.3% (N=21) in Level 2, and 38.5% (N=25) in Level 3. Unit 7Z1 Level 3 had the highest concentration of glass beads: eleven in that unit/level. Unit 4Y0 Level 1 and Unit 6D1 Level 3 had ten and nine beads, respectively.

The concentration of glass beads at Unit 7 was particularly significant. Figure 7.19 displays these totals. The highest concentration of beads was found in Unit 7Z1, which contained twenty glass beads. Unit 7A1, the unit just to the north of Unit 7Z1, had eleven beads. The northwest corner and southwest corner of Unit 6 also contained high concentrations of glass beads, with fifteen and ten in each, respectively. These bead clusters suggest that beads were strongly related to household areas at the site. Locations at households suggest associations with indviduals and, moreover, individual wealth and/or status, implying these beads were both valued and used to distinguish and potentially rank houses that had more or less status items.

The presence of glass beads throughout the occupation of Khubu la Dintša suggests that Khubu la Dintša was significantly linked to long-distance trade. Glass beads were found in the earliest of the dated units – Unit 6 – as well as in the later units such as Unit 7. As mentioned in Chapter 3, the Early and Middle Lose periods span the rise of Mapungubwe, the transition to Great Zimbabwe, and Great Zimbabwe's occupation. At Bosutswe, long distance trade continued throughout this period, although it was interrupted by a major burning episode around 1300 AD. This burning episode served to mark the break between the Early and Middle Lose periods. Most of the occupation at Khubu la Dintša appears to be Middle Lose, after Mapungubwe's collapse (Chapters 2 and 3). Level 3 from Unit 7 dates to this period. Level 3 at Unit 7 also had the highest concentration of glass beads of all levels, both in a single unit/level (7Z1 L3, N=11) and by excavation unit (7Z1, N=20). These glass beads are present in abundance throughout the Middle Lose period until abandonment of Khubu la Dintša around the 15^{th} century. This abandonment may be related to the decline of the Bosutswe region's participation in the long-distance trade network or to a Lose population taking refuge at the site, having returned to Bosutswe after it was deemed safe and habitable. Both these scenarios are expanded on in Chapter 9.

Concentrations of glass beads also differed substantially between the household (Units 6 and 7) and non-household (Units 4 and 5) areas. Table 7.3 displays the relative abundance of the glass beads by unit. The ratios of these beads were compared to the unit with the smallest concentration, Unit 5. Unit 5, however, was only excavated to 2x2m dimensions. As Units 4, 6, 7 were all 4x4m units, Unit 5 needed standardization in order to compare it to the other units. For Unit 5, the total number of beads from the 2x2m excavation unit was multiplied by four. Unit 5 "standardized," the resulting hypothetical 4x4m unit, was denoted as Unit 5*. The ratios were based on this Unit 5* amount.

The majority of the beads were found in Units 6 (N=83) and 7 (N=72), nearly twice the amount found in Units 4 and Unit 5*. Unit 4 had forty-six beads, significantly fewer than Units 6 and 7. Even when standardized, Unit 5* still had the lowest hypothetical number of beads, at 40 for the unit. Thus, Unit 5* was used to set the ratio baseline. Unit 7 had a 2.15:1 ratio versus Unit 5*, and Unit 6 had a 1.63:1 ratio versus Unit 5*. In contrast, Unit 4 had a near identical concentration, with a 1.15:1 ratio compared to Unit 5*. Extending that comparison to Unit 4, Units 6 and 7 still had nearly double the concentration of Unit 4.

The higher concentration of glass beads at Units 6 and 7 has a couple of implications. Most likely, these units were household areas. Unit 7 contained a house floor, and Unit 6 has been hypothesized to be either a household area or an activity area. Glass beads were often associated with individuals as individual markers of wealth. That glass beads were concentrated in a house with individual goods, rather than in a midden or kraal, is not surprising. A second scenario exists for the low concentration of beads in Unit 5. Unit 5, as discussed in Chapter 6, may be earlier than the radiocarbon dating suggests, likely extending back to the 13th century and perhaps even earlier. Unit 5 may be associated with an earlier Toutswe occupation of the hilltop. This occupation may have been a small cattle post not associated with long-distance trade or not sufficiently important to Bosutswe to warrant the redistribution of glass beads there.

GLASS BEADS AND COLOR

As discussed above, colors are one way to categorize glass beads chronologically. Colors in Wood's (2000, 2005, 2011) analyses of glass beads found in Africa include blue, blue-green, green, yellow, black, brownish-red, orange, plum, and white. Colors noted from Bosutswe region include blue-green, green, yellow, brownish-red, and orangish-yellow (Robertshaw et al. 2010). Colors were catalogued for all glass beads found at Khubu la Dintša and were generally classified by Wood's standards. However, as these observations were made in the field prior to the knowledge of Wood's standards, some of the categories differed (later this chapter). Wood's color classifications used the Munsell Book of Colours (1976), evaluated under natural daylight and with wet beads considered standard for this type of analysis. If not viewed in natural daylight, there is a chance that certain beads, especially translucent beads, may appear different shades. Color can be affected by a number of post-depositional processes, including patina, dirt, scratches, density, and corrosion (Wood 2011:70). Corrosion is particularly relevant in the case of Khubu la Dintša, as it has the ability to turn black beads into white beads (Prinsloo and Colomban 2008:87-88, Robertshaw et al. 2010, Wood 2011; see below).

Glass bead colors at Khubu la Dintša

The colors of the beads discovered at Khubu la Dintša range from reds and yellows to blues and greens, including: yellow, yellow-orange, turquoise, blue-green, blue, green, red, black, and white (Figure 7.20). Black beads in Iron Age assemblages occasionally corrode, which eventually turns them fully white (Robertshaw et al. 2010, Wood 2011, Prinsloo and Colomban 2008:87-88). White beads were not found until the Khami period, after 1450 AD, and even then were a minor portion of the bead assemblage (Wood 2011). Multiple "white" beads were present in my data catalogue (N=16). These may be associated with the same white corrosions on black beads these scholars noted in their analyses. However, white and black beads were kept separate for the following analysis in case these beads were associated with the Late Lose period and Khami series beads (Denbow in conversation 2013).

Yellow, black, and turquoise glass beads dominated the Khubu la Dintša assemblage (Figure 7.21) at 34.5%, 32.8%, and 14.9, respectively. All of the red beads (N=8) were found in Unit 7 Level 3 and correspond to the house floor discovered in the same unit. Four blue beads and two of the three yellow-orange beads were also found in Unit 7. One turquoise Mapungubwe-style wound bead was found in Unit 5, Level 6 (Chapter 8). Units 4 and 6 contained the greatest number of white beads (N=4 and N=8, respectively), but these may well be corroded black beads. Deviations from the mean color distribution suggest an unequal distribution of bead colors. In Unit 7, yellow beads and blue beads were overrepresented and it provided the only red beads at the site. Units 4 and 6 contain a higher percentage of black beads versus elsewhere on the site. In Unit 5, turquoise beads were overrepresented as well. Unit 7 presented the most diverse set of beads, with far fewer black beads than in other units.

Wood's analyses used categories of blue, blue-green, green, yellow, black, brownish-red, plum, orange, and white. Munsell colors were recorded for all categories, from Zhizo to Khami series beads. In order to compare the Khubu la Dintša collection to Wood's southern African collection, some amount of reclassification was needed. Although the majority of the Khubu la Dintša beads were recorded without the aid of a Munsell chart, a Munsell color chart was used on the twenty-two bead subset used in the chemical analysis (Chapter 8). The bead categories created for this dissertation were compared to Munsell standards and then were reclassified to according to Wood's categories. If there was no direct corresponding color in Wood's Munsell tables, they were compared it to the closest classified color, and coded accordingly. For example, the “blue” beads involved in my Khubu la Dintša analysis corresponded with Wood’s “blue” category; two were directly identified, and the third was classified through a color comparison. These categorical changes include:

- Yellow-orange to Orange. Yellow-orange from the Khubu la Dintša classification corresponded to Wood’s "Orange" category.
- Turquoise to Blue-green/Green. Turquoise proved the most complicated category for conversion, as there were three potential reclassifications: blue, blue-green, and green (Tables 7.4 and 7.5). The Munsell color classifications for the turquoise beads matched both Wood’s “green” and “blue-green" categories. In order to mitigate misrepresentation in either, I reclassified turquoise beads as “Blue-green/Green."
- Red and Brownish-red/Plum. Red beads could potentially be either “Brownish-red” or “Plum." My classification for the red beads, 7.5R 3/8 (“Brick Red”), did not correspond to Wood’s identified Munsell colors. The nearest color match, 5R 3/6, is represented in both of Wood's categories (Table 7.6). Therefore, Wood's color categories were likewise combined into "Brownish-Red/Plum."

The colors of Wood’s southern African bead collections differed significantly from the glass beads from Khubu la Dintša (Table 7.7). Due to the calibrated dates associated with Khubu la Dintša, the East Coast Indo-Pacific, Mapungubwe Oblate, Zimbabwe, and Khami series were considered. As mentioned earlier, blue-green and green beads composed the entirety of the Zhizo (not shown) and East Coast Indo Pacific bead series. In Wood's analysis, black beads dominated the Mapungubwe Oblate series, with 83.3% of the total assemblage. Blue-green/green beads and yellow beads were also present, but in a 1:6 ratio versus black beads. Blue-green beads occurred nearly five times as frequently (4.72:1) as yellow beads. The Zimbabwe series contained the highest percentage of brownish-red/plum beads over any other time period, at 10.8%. Blue-green/green beads dominated the assemblage in the Zimbabwe series, at 57.7%. Yellow was the next most represented color, at 10.8%. This was a five-fold increase in the proportions of yellow and blue-green/green beads versus other bead colors. The proportion of black beads was significantly reduced to just 4.6% of the assemblage. The Khami series had a large increase in the number of blue beads present, to 30.2% of the assemblage. Blue-green/green beads continued to be the most common beads found, at 35.6% of the assemblage. This was the only period where white beads were discovered; they compose 3.0% of the total assemblage.

Thirty-five of Wood's forty-two beads from Bosutswe were used in Robertshaw et al.'s (2010) chemical analysis, for which the data and colors are available. As mentioned earlier, this sample is small and not necessarily representative in their colors or their proportions of the glass bead collections found at these sites; comparison is only for reference and is not definitive. The colors recorded for the Mapungubwe Oblate beads and Khami beads are similar to those noticed at Khubu la Dintša: blue-green, green, reddish-brown, yellow, and orangish-yellow (Table 7.7). Yellow and blue-green beads dominated the Mapungubwe Oblate series, and yellow for the Khami series. Brownish-red (N=5) and orangish-yellow (N=2) were also present in the Bosutswe Khami series beads. Both black and white beads were not noted in Robertshaw et al.'s analysis.

At Khubu la Dintša, yellow and blue-green/green dominated two-thirds of the assemblage. When considered from an Early Lose (Units 5 and 6) versus Middle Lose (Units 4 and 7) perspective, the proportions of yellow beads increased slightly over time while the percentage of blue-green/green beads fell in similar quantities. Yellow beads were the most significantly over-represented beads at Khubu la Dintša, both when the assemblage as a wholeis considered, at 34.5% of the assemblage, or in loose Early

Lose/Middle Lose unit classifications of 30.7% and 36.4%, respectively. Even when considered in their lowest concentrations (Early Lose, 30.7%), yellow beads remained far more prevalent than what was found in any of Wood's bead series. This is, however, similar to the color distribution noted in the Bosutswe glass beads. Yellow and blue-green/green are the colors associated with the Mapungubwe Oblate beads (N=14). In the Khami period (N=19), the percentage of yellow beads remains high, at 47.4%, while the percentage of blue-green/green beads decreases to 15.8% of the assemblage. This high prevalence of yellow beads suggests a difference may be occurring in the Bosutswe region versus elsewhere in southern Africa. Yellow beads may have been preferred, or just more readily available.

Further anomalies are found in the black category. Black beads were 14.9% of the Khubu la Dintša assemblage. Similar to Wood's trends from the Mapungubwe Oblate beads onward, the percentage of black beads at Khubu la Dintša decreased from the Early to Middle Lose periods. The proportion of black beads to other colors, however, was far lower than the Wood's Mapungubwe Oblate series (83.30%) but far greater than the Zimbabwe series beads (5.5%) or the Khami series (5.5%). The latter may be a result of treating each set of units as solely associated with the Early or Middle Lose time period, without regards to the Middle Lose unit levels that may have contained earlier occupations or later intrusions. Another alternative for such skewing of color proportions may be that the beads already present at the site were re-circulating the region, or through gifting or the passing down through generations. In the Wood/Robertshaw collection of Bosutswe beads, no black beads were catalogued. However, some were found at Bosutswe (Denbow in conversation 2011). In order to determine if the color distribution differs between Bosutswe and Khubu la Dintša, a greater representative sample from Bosutswe is needed. Regardless, the proportion of black beads at Khubu la Dintša, even in the Early Lose period, was far less than at other southern African sites during the Mapungubwe Oblate series. This is particularly important as the chemical analysis suggests these are mostly all Mapungubwe Oblate beads (Chapter 8).

The differences in the glass bead colors – similar in type to Wood's previous studies, yet different in proportion – suggest a couple of trends in the Bosutswe region. First, the glass beads at Khubu la Dintša may be representative of the colors arriving in the Bosutswe region, either due to distribution or having been chosen preferentially by the community. It is also possible that the beads being traded between Bosutswe and Khubu la Dintša are from a limited set of colors. Certain colors may be more valuable than others; selection and control of the beads' distribution would create patterns. The rest of the glass beads from Bosutswe have not yet been catalogued extensively by color, but could be in order to address this question about local distribution.

SHELL BEADS: OSTRICH EGGSHELL AND OTHERS

Shell beads were the most common bead type found in the Khubu la Dintša assemblage. Shell beads or shell raw materials were found in all the units (N=1,186). These included ostrich eggshell beads, slate beads, *Achatina* beads, mussel beads, and metal beads. OES beads were noted in categories, as well as broken OES beads. OES beads that were in the process of bead production were also found.

The process of bead making involves tools such as wooden hand drills, a fracturing device like an awl, and a grooved piece of stone to smooth the edges into the final rounded form. Shell beads were often used for personal adornment. Extensive ethnography of bead making in southern Africa indicates women as being the bead makers (Carey 1998, Mertens 1966, Schapera 1930, Wiessner 1984), although the degree to which this holds true in prehistory remains uncertain (Dubroc 2010:17). Beads hold symbolic and functional meaning in many southern African societies, including both Bantu and Basarwa communities (Dubroc 2010:21-23). Ostrich eggshell beads may have been left at rainmaking places as offerings (Schoeman 2006). Stylized, beaded belts indicate kinship and trade connections (Carey 1998, Schapera 1930, Wiessner 1997). Regional differences in bead type and style at Late Stone Age sites suggest that shell beads were selected for their ties to social groups (Mitchell 1996:47). Beads were likely used in Iron Age communities to indicate status (Calabrese 2000:202, Dubroc 2010:24). Calabrese, for example, noted the disproportionate distribution of glass and shell beads between the hilltop elites and other groups living around the base of Leokwe Hill in South Africa (Calabrese 2005). Status is indicated in the presence of bead necklaces as grave goods in Iron Age burials, as not all graves have such burial offerings (Denbow and Miller 2007, Dubroc 2010, Owens 1995, Pearson 1995).

Shell beads (N=1,791) from the 2000-2 Bosutswe excavations were analyzed by Beau Dubroc for his master's thesis at the University of Texas at Austin (Dubroc 2010). Dubroc's extensive descriptions of those beads provide a substantial base from which to understand the technology and compare the various shell beads from Bosutswe to Khubu la Dintša.

The majority of the beads from the Central and Western Precincts at Bosutswe (84.3%) were ostrich eggshell beads. In Level 15 at the Central Precinct, an Early Lose level, over 200 roughened ostrich eggshell beads were found, indicating a bead workshop (Denbow et al. 2008, Dubroc 2010). Strong trade connections between Bosutswe and other areas of Botswana appeared in the 11th century. Mussel shells (N=94 of124, 7.5% of the total assemblage) and *Achatina* beads (N=45 of 81) were concentrated in these levels (Dubroc 2010:31). These types of shell may have come from the Boteti River region to the northeast. *Achatina*, or land snails, inhabit various areas of Botswana. However, only one unworked shell, the raw material for making the *Achatina* beads, was found at Bosutswe. Dubroc (2010:38) postulated that these were also traded from elsewhere.

The shell beads collection from Khubu la Dintša

Beads made from ostrich eggshell (*Strutheo camelus*) composed the majority of the bead assemblage at Khubu la Dintša (Figure 7.22). These beads were divided into four categories: complete ostrich eggshell beads (OESB), broken ostrich eggshell beads (broken OESB), roughened ostrich eggshell beads (Rough OESB), and ostrich eggshell fragments (OES frag). The latter three categories relate to beads that were either discarded or still in some stage of their production. "OESB Roughened" beads are ostrich eggshell beads that are in the process of being made. Some of these had a central hole drilled into them but had an unfinished exterior. Others were abandoned in earlier stages of their production; they were not been fully sized down, the edges were not smoothly cut, or they lacked a drilled hole in the center. Broken eggshell beads imply fracture in the process of formation, or breakage during use or after discard, most likely from being trampled by large, hoofed animals such as cattle.

Most of the shell beads from Khubu la Dintša (71.8%, N=852) were whole, roughened, or broken ostrich eggshell beads. Although ostrich eggshell beads were found in 162 of the 331 unit/levels, only sixteen unit/levels contained more than five. The unit that contained the most ostrich eggshell beads, Unit 7Z0 Level 3, contained 39 beads. These beads coincide with the presence of the house floor, and are found immediately adjacent to the house. Units 4, 6, and 7 each contained greater than five beads in their unit/levels: Unit 4 contained five unit/levels grouped in two areas (group one: 4A2 Surface (N=9), 4B1 Level 1 (N=6), and 4Y1 Level 2 (N=11); group two: 4Z1 Level 1 (N=9), 4Z2 Level 1 (N=6)), Unit 6 contained seven unit/levels in four areas (group one:

6B3 Level 3 (N=6); group two: 6B4 Level 1 (N=6) and Level 2 (N=11); group three: 6C1 Level 2 (N=7) and 6C2 Level 2 (N=6); group four: 6D3 Level 3 (N=6) and 6D4 Level 1 (N=7)), and Unit 7 contained four unit/levels in two areas (group one: 7Z0 Level 3 (N=39), 7A0 Level 3 (N=7) and Level 4 (N=7); group two: 7C1 Level 3 (N=8)).

Eighty-two beads were found "roughened," in the stages of production. The majority of the roughened beads (N=42) came from Unit 6. This number was far greater than the next highest concentration in Unit 7 (N=16) or Unit 4 (N=9). It suggests that Unit 6 may be a specialized production area for beads or a household area. Ostrich eggshell fragments, also indicative of bead production areas, were also found in abundance. Two hundred sixty-five ostrich eggshell fragments were found at Khubu la Dintša. Twelve unit-levels had more than five fragments (N=103/265). Two-thirds of the levels with more than five fragments were located in Unit 6 and contain 70.9% of the beads (N=73). This reinforces the idea that Unit 6 may have been a bead production area.

These remaining beads found at Khubu la Dintša were grouped together in a general category called “other" beads. As the author had less training in identifying these types of beads, a broad category became the best way to categorize the beads without assigning them into the wrong category. It is highly likely that these beads are similar to other shell and other types of beads noted at Bosutswe. The raw materials for these beads may have included land snail (*Achitinidae*), river mussel (*Mutelidae*), aragonite (a form of calcium carbonate), bone, and slate beads, all bead types noted at Bosutswe (Dubroc 2010:29-30).

Shell beads (N=69) are a smaller but still significant part of the assemblage, at 5.8% of the shell beads (Figure 7.23). As explained earlier, shell beads were considered highly valuable, and indicate trade relations with elsewhere in the interior of Botswana. Shell beads occur throughout the occupation of the site, down to the earlier levels of Unit

5, presumed the oldest unit (Figure 7.24). Shell beads occurred most frequently in Units 4 and 7, the “Middle Lose” units at the site. If centrally channeled through Bosutswe to Khubu la Dintša, it would argue for the increasing importance of the latter. Unit 7 also had the highest number of glass beads of all the excavation units. In contrast to the main concentration of glass beads in Level 3, it is Levels 2 and 4 at Unit 7 that contain the highest quantities of “other" beads. Similar to glass beads, “other beads” may be particularly important for demonstrating individual status; the house in Unit 7 may be a high status Lose house. Few “other" shell beads were found in Unit 6. There may be variation through time of the availability of “other" shell beads. Unit 6, however, had the highest concentration of metal beads, discussed below.

METAL BEADS

Iron, copper, and bronze beads were found at Bosutswe, alond with other metal objects such as tools made out of iron, bronze and iron bangles, and iron slag. One hundred nineteen of these metal objects, including thirty-seven iron artifacts from Bosutswe, were analyzed and described by Duncan Miller with dual metallographic/petrographic microscopes (Denbow and Miller 2007). Each of the periods at Bosutswe was represented in the metallurgical analysis: Taukome (N=4 metal objects), Toutswe (N=3), Early Lose (N=2), Middle Lose (N=7), and Late Lose (N=8). Thirteen artifacts found on the surface were also analyzed. Like Dubroc’s shell bead analysis, Denbow and Miller’s (2007) analysis provides an in-depth understanding of the manufacture of metal beads at Bosutswe.

Denbow and Miller’s (2007) study of the metal artifacts at Bosutswe provides context for the metal beads found at Khubu la Dintša. Over one hundred metal objects (N=119) were selected in their study, including gold, copper, iron, and slag. Most of the iron artifacts were chisel cut carbon steels typical of bloomery smelting, a relatively uniform technique found across southern Africa (Denbow and Miller 2007, D.R. Miller 2002). Copper beads from Bosutswe were similar in form no matter the time period; however, the degrees of cold working varied through time. Copper beads were hammered into flat strips, chisel-cut, and cold-worked into beads. Bronze beads were made from an alloy of copper and tin. An admixture of 2-15% tin was added to copper to make the bronze variably yellow in collor. Other bronze objects from Bosutswe included a wire bead and wound helix bracelets (Figure 7.25). Bronze appears at Bosutswe after 1300 AD, post-dating a major burning episode at Bosutswe (Chapter 4). Copper beads were found at Bosutswe both before and during the Lose period alongside both Toutswe and Lose ceramics. The high value of copper, bronze, and gold at Bosutswe is evident in their high concentration in the Central Precinct. For example, five bronze items were associated with Denbow's "hyena floor" mentioned in Chapter 4. In the Western Precinct, where slag has been found and iron metal manufacture was most likely, only ten iron beads were found. Only one iron metal bead was discovered in the northern area of the site, where a 2x2m unit was excavated (81-2W, 73-4N). In contrast, twenty-six iron beads were found in the Central Precinct. This suggests that metal beads likely were a status item, associated with powerful individuals. These beads also appear to be clustered by time period: 84.6% of the iron beads in the Central Precinct fall into the Middle Lose period of 1300-1450 AD. Only one of the beads (from Level 16) is from the Early Lose period. Although six of those iron beads came from Level 11, the transitional level between Early and Middle Lose periods, most are still found in definite Middle Lose levels.

The metal beads collection from Khubu la Dintša

Thirty-seven metal beads were found at Khubu la Dintša, 3.1% of the total bead assemblage (Table 7.8). Although all the beads were corroded on the exterior, they could be easily categorized as either iron or copper/bronze beads. One of the beads was lost, and its metal type is unknown. Of the thirty-six identified metal beads, a significant proportion (38.9%, N=14) were copper (Figure 7.26 and Table 7.9). There is also a possibility that some or all the copper beads were bronze, but XRF or ICP-MS analysis will need to be performed. Thirteen of the copper beads were found in Levels 1 or 2 of Unit 6. Unit 6 contained the majority of the metal beads found at the site. 67.6% (N=25) of the metal beads were located in this excavation unit. Units 4 and 7 contained five beads each, just a fifth of the amount found in Unit 6.

Bead diameter (width), bead length, and hole diameter were recorded. The shape and thickness of the beads had two general variations (Figure 7.27, Table 7.10, and Figure 7.28). Many were shorter and more rounded, with a greater diameter and thickness. Others were thinner and longer – collar-shaped – and had a larger hole diameter. The latter was especially true for the copper beads. Four iron beads appeared to be clamped as their closure. The average length, or thickness of the bead, was similar for both copper and iron beads. The width, however, was greater for iron beads. Widths averaged 3.9mm for copper beads and 5.3mm for iron beads. Copper beads appeared to be more standardized in general; the ranges of the lengths, widths, and hole sizes were half that of iron beads. The width-to-length ratio also varied between iron and copper beads. Iron beads had a higher width-to-length ratio (1.97:1) than copper beads (1.23:1). The diameter of the holes on iron beads is likewise larger, 2.2mm versus 1.7mm on copper beads.

The concentration of iron and copper beads in Unit 6 may be due to a couple of different factors. First, it may relate to ostrich eggshell bead production in this area. This may also be a production area for metal beads. It may also relate to the antiquity of Unit 6. Unit 6 is one of the earlier units dated at Khubu la Dintša, dated to the 13th century. At Bosutswe, this was when involvement in long-distance trade increased. The associated boom in wealth may have led to the establishment of the settlement at Khubu la Dintša. Glass beads may not have been as prevalent during this earlier period, or different valuation systems may have been placed on metal and glass beads. Either way, the concentrations of metal and especially iron beads at Khubu la Dintša weresignificantly greater than in the Early and the Middle Lose periods at Bosutswe.

COMPARISON OF GLASS, SHELL, AND METAL BEADS FROM KHUBU LA DINTŠA TO BOSUTSWE

Comparison with the bead assemblage of Bosutswe required grouping levels from the Central Precinct of Bosutswe in order to fit the Khubu la Dintša beads into Early, Middle, and Late Lose periods. Only the Central Precinct was examined, for two reasons. First, post-depositional processes affected the Central Precinct far less than the Western Precinct. There were only three layers of Lose materials in the Western Precinct, and distinguishing Early and Middle Lose materials when every layer had not been dated would have proved very difficult. Second, the Central Precinct contained the majority of the prestige beads – glass, metal, and special shells. The comparison the Central Precinct levels at Bosutswe to Khubu la Dintša establishes Khubu la Dintša's relative importance and high status.

To determine the corresponding Lose periods for the Central Precinct levels, the author adopted a version of Atwood (2005) and Dubroc (2010:7)'s chart of the Bosutswe chronology (Figure 7.29). The Bosutswe levels were divided follows: 23-12, Early Lose

(1200-1300 AD); 11-7, Middle Lose (1300-1450 AD); 6-1, Late Lose (1450-1700 AD). Level 11 was associated with the burning episode at Bosutswe; therefore, it can be assigned to either the Early Lose or Middle Lose period. Level 11 was grouped with Middle Lose levels for the purpose of this comparison, as the burning episode is believed to have occupied after Mapungubwe's collapse. Direct comparison was made using the total count for each Lose period as well as the volume of materials per both unit and unit/level (Table 7.12). The number of units excavated in each Lose period varied in Denbow's excavation of the Central Precinct. For example, eighteen 1x1m subunits were excavated for the Late Lose period, but only four 1x1m subunits were excavated for the Levels 20-23 in the Early Lose period. Therefore, volume was only calculated by Lose period (i.e. Early Lose, Middle Lose, or Late Lose) rather than considering all the periods together. Table 7.12 gives the average number of artifacts in each time period divided by the number of units or unit/levels excavated. For Bosutswe, this varied from four to twenty-two units, depending on the level; for Khubu la Dintša, there was 60 m^2 of excavated area and 23.8 m^3 of volume of material, so that total was divided by sixty for unit concentrations and two hundred thirty-eight for unit/level concentrations.

Direct comparison yielded interesting results. At Bosutswe, concentrations in glass beads dropped between the Early and Middle Lose periods. It was not until the Late Lose period, after the collapse of Great Zimbabwe, that glass beads were found again in abundance at the site. Metal beads were found most frequently during the Middle Lose period, and were almost non-existent before then. "Other" shell beads also appeared in greater frequency from the Middle Lose period onward. However, concentrations of glass and at times metal beads were higher at Khubu la Dintša. Comparison of the raw numbers of all the glass beads found at Bosutswe (N=73) versus Khubu la Dintša (N=229) suggests that Khubu la Dintša was an anomaly. At Khubu la Dintša, the concentration of glass beads per unit was 3.8 beads per m^2. This is higher than both the Early Lose (1.8 beads per unit) and the Middle Lose (0.7 beads per unit) periods at Bosutswe. Even if the Early and Middle Lose per unit concentrations are combined, Khubu la Dintša still has a greater concentration of glass beads. When considered per unit/level, the difference between Khubu la Dintša and Bosutswe beads is stark (0.06 per unit/level at Khubu la Dintša versus 0.3 and 0.15 per unit/level at Bosutswe). This trend, however, did not continue for other bead types. Ostrich eggshell and "other" shell beads, although present in significant amount at Khubu la Dintša, were fewer than the number and found in lower concentrations than at Bosutswe in all of the Lose periods. Khubu la Dintša had slightly more than half the concentration of metal beads during the Middle Lose period at Bosutswe. However, the metal beads from Khubu la Dintša were four to seven times greater in concentrations per unit than the Early and Late Lose periods at Bosutswe. The influx of wealth that Bosutswe experienced during the Middle Lose period was definitely shared with the site of Khubu la Dintša.

This direct comparison to the Bosutswe bead assemblage exemplifies how anomalous the glass and metal bead collections from Khubu la Dintša are. If site hierarchy was strong in the Bosutswe region, there should not be such a great concentration of prestige goods at subordinate hinterland sites like Khubu la Dintša. The glass and metal beads argue in favor of a lack of intersite hierarchy. Perhaps a heterarchical relationship formed between Bosutswe and Khubu la Dintša. Alternatively, this wealth may imply that Lose inhabitants fled from Bosutswe during a time of warfare for a more defensible location at Khubu la Dintša and brought their wealth along with them. Khubu la Dintša may have temporarily served as the main trading center in the Bosutswe region. These comparisons will be considered further in Chapter 9.

Chapter Eight: Special Analysis of the Khubu la Dintša Glass Beads

Initial analysis of bead assemblages from Khubu la Dintša raised important questions about the local value of glass beads and the social and economic relationships that tie the Bosutswe region together and to broader, regional trade. The unexpected concentration of glass beads prompted closer examination of these artifacts in particular. Understanding the distribution of luxury goods in the region addresses questions about inequality and access to prestige goods, and we gain a better understanding about how beads form a part of daily and ritual activities in the African Iron Age.

A second round of macroscopic and chemical analysis was conducted on a subset of twenty-two glass beads from the Khubu la Dintša. The second analysis attempted to better ascertain the origins of the glass beads at Khubu la Dintša. These findings were interpreted in relation to the geography of regional power dynamics operating throughout southern Africa. The glass beads from southern Africa can be classified fairly well macroscopically, as discussed in Chapter 7. Mass spectrometry works well on materials such as glass to identify major aspects of a bead's composition. In the context of this dissertation, dating these beads helped to determine when the glass beads entered the Bosutswe region. All the beads selected except for one were Mapungubwe Oblate or Zimbabwe series beads. If a majority were Mapungubwe Oblate beads, their high occurrence at Khubu la Dintša would imply these beads were still being exchanged in the local region, or perhaps even tied into the Lose identity. Further, more extensive macroscopic and chemical analysis may be able to address this possibility. The last bead comes from either an earlier East Coast Indo-Pacific series or a later Khami series. If the former, this bead may be associated with an earlier settlement at Khubu la Dintša, or have been the result of a bead passed down through generations in the Bosutswe region. If the latter, this bead may indicate a later, Late Lose intrusion at the site.

LA-ICP-MS AND GLASS BEADS

The application of LA-ICP-MS to glass beads has been highly successful in Africa and Asia to trace glass bead origins to specific sites in Europe, the Middle East, and south and southeast Asia (Dussubieux 2001; Dussubieux and Gratuze 2003; Dussubieux et al. 2008, 2009; Robertshaw et al. 2003, 2006, 2010; Wood et al. 2012). LA-ICP-MS analysis of these beads identifies their provenance based on the major and trace elements present in a bead's composition. Research in the far reaches of the Indian Ocean trade network has been limited; understanding links of the interior of Africa to the Indian Ocean trade remains understudied and not well delineated. Indeed, new trade routes have been discovered through previous LA-ICP-MS research (Wood 2012). Chemical analysis strengthens our understanding on how the regional trade network operated, both through flux in sources and flux in the interior routes.

Twenty-six beads were selected for LA-ICP-MS analysis, twenty-two of which came from the Khubu la Dintša assemblage. The other four beads were from Mmadipudi Hill, and are discussed in Chapter 10 in context with the rest of the Mmadipudi Hill excavations. Macroscopic characteristics of the twenty-two bead subset were also recorded, adopted from Wood’s (2000, 2005, 2011) system of bead analysis. The characteristics recorded were: length of bead, diameter, Munsell color, end treatment (if applicable), diaphaneity, roundness, size, and type. Size and type were determined based on previous diagnostics. The goal of the analysis was to determine to which bead series the Khubu la Dintša and Mmadipudi Hill assemblages belonged.

These beads were analyzed using an LA-ICP-MS in 2012 at the Field Museum in Chicago under the supervision of Dr. Laure Dussubieux. Descriptions of LA-ICP-MS instrumentation and its archaeological applications, analytical protocol, and calibrations are discussed in Dussubieux et al.. 2009. Beads that underwent the macroscopic and chemical analysis follows are categorized according to guidelines set up by earlier research about Indian Ocean beads, especially for southern Africa (Wood 2000, 2005, 2010, 2011; Robertshaw et al. 2003, 2006, 2010; for a broader discussion of Indian Ocean glass beads see Brill 1987; Dussubieux 2001; Dussubieux and Gratuze 2003; Dussubieux et al. 2008, 2009; Popelka et al. 2005).

BACKGROUND

Ancient glass is most often made from melting sand – mostly silica – and an alkali or alkali earth-based flux, the later necessary to keep the melting point low (Henderson 2013). A sodium-based flux was often used, obtained either from soda plant ash or mineral deposits. Magnesium and potash indicate the purity of the soda flux, which can help group different beads by provenance and time period. For example, natron, a mineral deposit that contains sodium carbonate, contains low quantities of magnesia and potash. In contrast, soda plant ash, obtained from halophytic plants, have much greater magnesium and potassium levels. When magnesia and potash are greater than 1.5% of the total composition of the glass, plant ash flux was most likely used. Potash, lime-based, and lead fluxes can also be used. Alumina and lime, often naturally present in the sand used for production, are also necessary to produce durable glass. Lime can also be added separately as a stabilizer if these concentrations are not sufficient. High aluminum sand generally comes from granite sands that are poorly refined and contains many other elements; high lime sand can originate from coastal deposits or other high lime sources.

Titanium and iron are also present in the sand, and can be source-specific. Together, these major elements are one way to identify the sand sources and method of manufacture.

Glass beads found in sub-Saharan Africa are made from soda-lime-silica glass, like almost all Roman, Byzantine, Islamic, and Indian beads, and some European beads (Brill 1999, Dussubieux 2001, Robertshaw et al. 2010, Wood et al. 2011; Wood 2000, 2005). The types of soda used can be diagnostic for most of the time periods and bead series associated with southern African Iron Age glass beads (Robertshaw et al. 2010, Wood et al. 2011) The two main sources of alkali used for these beads are mineral soda and plant-ash soda.

Mineral-soda glass used either natron combined with high lime sands or other types of mineral soda combined with high aluminum sands, the latter having been subgrouped by time and period according to the amounts of uranium, barium, cesium, lime, and potash levels in the glass (Dussubieux et al. 2008, 2009; Robertshaw et al. 2010). Most soda aluminum glass from southern Africa is high-uranium, low-barium glass. Mineral soda beads include K2 Indo-Pacific beads, K2 Garden Rollers, East Coast Indo-Pacific beads, and Khami series beads. Mineral soda alumina glass is especially common for beads coming from India and Southeast Asia between the 4th century BC and 10th centuries AD.

Plant-ash soda, in contrast, is created by turning alkali-tolerant halophytic plants, located in coastal areas, salt marshes, or desert regions, into ash (Robertshaw et al. 2010). Magnesium oxide (MgO) serves as the simplest determinant of the soda type: plant ash beads contain a level of MgO greater than 1.5% Mg0, and mineral soda glass beads have a level lower than 1.5%, often substantially so (Robertshaw et al. 2010:1902). Soda plant ash glass beads originate from the Middle East or other regions that still need to be identified. These sources can often be distinguished through their levels of aluminum and lime. Low alumina – high lime beads come from the Middle East, but anomalies exist (Brill 1999; Dussubieux et al. 2008, 2009; Robertshaw et al. 2010).

The chemical composition of glass beads varies based on the color of the bead, the degree of its preservation, the technology and methods used in manufacture, and the origin of raw materials. Levels of iron, lead, tin, copper, and cobalt vary with respect to color (Robertshaw et al. 2010:1908-9). For example, opaque yellow glass uses a lead-tin compound for the coloration of plant ash beads, but an antimony-based opacifier is used for mineral soda (natron) beads. Iron produces mostly black and transparent amber glasses. Corroded glass results in reduced levels of K, Na, Ca, and Mg due to the leaching of these elements, and higher levels of Al, Si, Fe, and Ti as thse are elements that remain in the glass (Dussubieux et al. 2009b:157-8, Robertshaw et al. 2010:1902). Beads with less than 10% Na_2O are considered too corroded for comparative study (Robertshaw et al. 2010:1902).

Glass Beads Selected for Study

Twenty-six beads from the Khubu la Dintša and Mmadipudi Hill assemblages were analyzed using an LA-ICP-MS with the assistance of Dr. Laure Dussubieux. The beads from Khubu la Dintša and Mmadipudi Hill were considered separately. Although both sites are Iron Age sites located in the same geographic region, a number of factors lead to this separate analysis. First, the two sites were discussed separately in this dissertation. Furthermore, Khubu la Dintša and Mmadipudi Hill did not overlap significantly in their occupations, and therefore not much overlap was expected in the bead series. Moreover, the amount excavated from each site differs significantly: 23.8m^3 at Khubu la Dintša and only 6m^3 at Mmadipudi Hill. Likewise, the number and concentration of glass beads found at each site were vastly different: 229 glass beads came from Khubu la Dintša, and only eleven beads came from Mmadipudi Hill. The number of beads analyzed from each of the sites reflects these differences: twenty-two from Khubu la Dintša and four from Mmadipudi Hill. Finally, the goals of the two analyses were different. Chemical and macroscopic analysis of the Khubu la Dintša glass beads attempted to profile that assemblage and provide clues as to the origin of the glass beads. The beads from Mmadipudi Hill primarily helped to date that hilltop.

Twenty-two beads from Khubu la Dintša were chosen for analysis, representing all of the 4x4m excavation units and all the colors found. Thirteen of the beads came from Unit 7, six beads from Unit 6, two beads from Unit 4, and one bead from Unit 5. In terms of potential biases, Unit 7 was overrepresented and Unit 6 underrepresented.

Morphology

Almost all the color categories described in depth in Chapter 7 were represented in the analysis. As explained in Chapter 7, this dissertation's glass bead color categories differ slightly from Wood's categories. Wood's categories were used for the subsequent analysis. Of the beads analyzed, seven were green, five were yellow, four were black, three were blue-green, two were brownish-red, and one was yellow-orange (Figure 8.1). Yellow beads were underrepresented in this analysis, in exchange for more analysis of yellow-orange and brownish-red beads.

One of the turquoise beads, K55-1_1, was a wound bead (Figure 8.2). As the shape and size of this bead differs significantly from the other (drawn) beads, it was considered separately for the morphological description.

The twenty-one drawn glass beads found at Khubu la Dintša ranged from 1.1mm to 3.9mm in bead length, with an average length of 2.1mm (Table 8.1). Diameter varied from 2.15mm to 4.10mm, with an average diameter of 2.9mm. Average hole size was about a quarter of the diameter, ranging from 0.3mm to 1.0mm, with an average size of 0.2mm. Significant positive correlations between length and width (.618, sig .003) suggest that bead diameter increases with an increase in length. Another weaker but still significant correlation links diameter to hole size (.535, sig .013). The length, width, and hole diameter varied irrespective of unit and level (Figure 8.3). Bead size, a metric based on bead diameter, places most of the beads into the small category (N=16), with a few beads in the minute category (N=4), medium (N=1), and very large (N=1, K55-1_1). According to Wood (2011), the Indo-Pacific series, Mapungubwe Oblate series, and Zimbabwe series are primarily comprised of these minute and small beads. Bead length, which considers the length to width ratio of beads, places all the beads into short (N=15) or standard (N=7) categories. Short beads are very common (60-80% of assemblages) in all series except for Zhizo series beads. All the minute beads are also short beads. Ten of the beads were oblate, eight were cylindrical, and four were tubular. This again puts the beads in the Mapungubwe Oblate and Zimbabwe series bead categories, possibly a combination of the two.

Chemical Analysis

Of the twenty-two beads analyzed from Khubu la Dintša, twenty-one were high alumina plant-ash beads. As mentioned above, plant-ash soda beads have a much higher composition of magnesium oxide than mineral soda beads. Average values for the major elements in the Khubu la Dintša beads compare well with both Mapungubwe Oblate and Zimbabwe series beads (Tables 8.2 and 8.3). Although a south Asian origin has been proposed based on aluminum levels in the glass (Robertshaw et al. 2010), the origin has yet to be elucidated, as high alumina glass was also produced in central Asia and the Middle East (Dussubieux in conversation 2013, Schibille 2011).

Only one bead from Khubu la Dintša, Bead K64-2, was a mineral soda glass bead (Table 8.2). The reduced composition of K64-2 indicates it has unusually low magnesium content (0.8%) but high sodium content (17.5%). One of the Mmadipudi Hill beads, MH75-1, also had a similar magnesium content. Both also had high zirconium levels. These two beads were determined to be mineral soda beads. These two are graphed together to show this strong separation (Figure 8.3). Bead K64-2 was black, tubular in shape, with a size range of minute but almost small, and had a high uranium value of 104ppm. The bead's color, black, did not exist in the K2 Indo-Pacific series but was common in East Coast Indo-Pacific and Khami series, and the uranium value also suggests the latter classifications. Its length was short, 64.5% of the diameter. The bead was found in Unit 6 Level 4, the unit that also gave the earliest radiocarbon date (ca. cal AD 1220-1280).

Although the bead was definitely Indo-Pacific, it was difficult to determine whether it was an East Coast Indo-Pacific bead or a Khami bead due to the overlap with characteristics of both series. Hierarchical clustering of nine major and trace elements that are typically associated with separating K2 and East Coast Indo Pacific beads from Khami beads (Na, Mg, Ca, Al, U, Zr, Cr, Ti, and P; after Robertshaw et al. 2010) provided mixed results, although they seemed to favor an East Coast Indo-Pacific classification. The tubular shape of the bead reinforces this possibility. Either way, this bead would have been associated with either an early or later bead series than the rest of the chemically analyzed glass beads from Khubu la Dintša.

The majority of the beads fell into the chemical categories of either Mapungubwe Oblate (MO) or Zimbabwe series beads. Beads from the MO or Zimbabwe series are difficult to distinguish from one another, although subtle differences between the two can be identified. Color is especially useful for this classification (Chapter 7). MO beads range in color from opaque black, translucent to opaque-translucent blue-green, light green, yellow, orange, transparent to transparent-translucent cobalt blue, to plum (burgundy). As discussed in Chapter 7, black is the most common color of MO beads (83.3%), followed by blue-green beads (11%) and a small number of blue and yellow beads (2%). Zimbabwe beads are similar chemically to MO beads, although they do have slightly higher concentration of potash, barium, and sodium, and lower magnesium oxide content than their predecessors. Other slight variations between Zimbabwe series and MO beads include: greater length and diameter, more transparent blue-green and yellow beads, less transparent cobalt blue beads darker in color and duller in shine, and pale translucent grayish-green beads. In the Zimbabwe assemblages, black beads are far less common, and dark green beads appear for the first time.

Unfortunately, the overlaps in major elements of the Khubu la Dintša plant ash beads with both MO and Zimbabwe series was too great to conclusively determine the correct category (Tables 8.2 and 8.3). However, a comparison between sodium and magnesium between the Khubu la Dintša beads suggest that these may primarily be MO beads (Figure 8.4). Trend lines of the Khubu la Dintša beads follow that of MO beads rather than that of Zimbabwe series beads. The lack of overlap between the beads may be a translation error between the two laboratories, series of analysis, and associated datasets (Dussubieux in conversation 2013).The trace element zirconium is another possible indicator of the separation between MO and Zimbabwe series beads (Robertshaw et al. 2010:1907). For Mapungubwe Oblate beads, however, the average amount of zirconium is 88±19 ppm; for Zimbabwe series beads, it is 147±27ppm. All of the data fall within one standard deviation (1SD) of the MO levels (Figure 8.5). Two of the beads, K61-1 and

K64-1, are at the upper limits of the 1SD Mapungubwe range. Yet, these still fall short of the lower limits of 1SD Zimbabwe beads. Although these two beads do fall within second standard deviation (2SD) range of the Zimbabwe bead series levels, the radiocarbon dates associated with these units and levels suggest they are not. It should also be noted that beads K63-1 and K71-3 fall within 2SD of Zimbabwe series. However, both are at the lowest limits of that range, and moreover fit in solidly within 1SD of MO beads. As it was noted earlier, bead K64-2 was an Indo-Pacific bead, and as such would not be a Zimbabwe series bead. Association with MObeads rather than Zimbabwe series beads is the more likely of the two. K71-3 would be the only candidate for a potential Zimbabwe series bead.

Expanding the sample size may allow for greater spread or indicate data trends that significantly correlate with one series or the other. Based on the colors of the whole assemblage, a mixture between both MO beads and Zimbabwe series beads is possible. However, the evidence from the chemical analysis suggests that the glass bead assemblage from Khubu la Dintša is dominated by Mapungubwe Oblate beads. If this is true, it raises the question of the circulation of glass beads within the Bosutswe region and the strength of trade and cultural affiliations with Mapungubwe long after Mapungubwe collapsed. Khubu la Dintša appears to be occupied primarily during the Middle Lose period, until at least the early 15th century AD. This was over one hundred years after the collapse of Mapungubwe, while the Zimbabwe series is being traded elsewhere in southern Africa. It suggests the continuation of a bead route different from that of Great Zimbabwe hegemony, or, at the very least, a difference in local preferences. If the latter, it may be a conscious attempt of the population in the Bosutswe region to distinguish themselves through bead color selection from their competitors at Great Zimbabwe. Further testing of more of the Khubu la Dintša beads is needed.

GLASS BEADS BEYOND THE IRON AGE

Perhaps the strongest argument for the value of glass beads as prestige goods comes from post-Iron Age periods. In the centuries following the collapse of Great Zimbabwe, diaries, notes, and records by Portuguese merchants and British colonials repeatedly documented the high status given to glass beads. Other bead scholars such as Wood (2005, 2012) and Dubroc (2010) also describe some of these diaries and travelogues that document the important part glass beads played in trade as well as their symbolic importance that has continued to the present day.

European involvement in the Indian Ocean trade began in the 15th century AD. Portuguese merchants noted both the high value placed on glass beads as a trade item and the emphasis of an exclusive point of origin placed on these beads by their African trade partners. Portuguese records state that European glass beads were not considered acceptable by their African counterparts; only glass beads originating from the Indian Ocean were considered proper currency (Theal 1898, Wood 2012). The Portuguese traders would travel to Indian ports such as Cambay or Nagrapatam in order to obtain beads for African trade. George McCall Theal, a British historian at the turn of the 20th century, translated many of these Portuguese documents, in which there are numerous cases where glass beads and/or Indian Ocean glass beads are mentioned. A few of these excerpts include:

> 1513: The merchants take to Sofala gold which they give to the Moors without weighing for coloured cloths and beads which among them are much valued, which beads come from Cambaya (Theal 1898:96).
>
> 1554: Among them was one of whom the rest seemed to make the most account...he was distinguished from them by wearing a few beads red in colour, round, and about the same size as coriander seeds, which we rejoiced to see, it seeming to us that these beads being in his possession proved that we were near some river frequented by trading vessels, for they are only made in the kingdom

> of Cambaya, and are brought by the hands of our people to this coast (Theal 1898:225).
>
> 1554: As the purpose of that king in desiring to have us there was not all founded in virtue, but partly in interest, a plague which generally infects most people (however rustic they may be), his hope was to get some gold or jewels by it, not because such things were necessary for his use, but because he knew that the Portuguese of the ship which came there in the past years bought these things from those who robbed Manuel de Sousa Sepulveda, giving beads in exchange, which they consider as great a treasure as are gold and jewellery with us (Theal 1898:270-271).

Noted in multiple accounts was the port of Cambaya in southwest India, one of the multiple known centers for glass bead manufacturing. Portuguese documents reiterate that beads played a large role in the exchange of African trade goods, especially gold. In the second passage, glass beads were an indicator of African groups in contact with Indian Ocean traders. Here, the encounter of the group of Africans was described and, notably, the most distinguished individual wore a string of Indian Ocean glass beads. In the final excerpt, glass beads were compared to other "valuable" items in the eyes of the Portuguese traders. The African traders saw little intrinsic worth in gold or jewels that were taken from a shipwrecked Portuguese vessel. These salvaged goods were seen as a way to trade for glass beads from the next group of Portuguese they would encounter.

Glass beads continued to remain important in southern Africa even after the Indian Ocean trade had diminished. Dubroc (2010) cites an account from David Livingstone, a 19th century British missionary in Botswana, who writes, "beads are invaluable, money being of very little use and rather a losing concern...and they always prefer a few beads" (Dubroc 2010:13, Livingstone 1959 [1875]:41). Perhaps a bias of his Eurocentric view, Livingstone interpreted glass beads as a form of monetary currency. He also noted that the size and shape of beads had different values, which he describes through pictures:

> The Waiyau prefer exceedingly small beads, the size of mustard-seed, and of various colors, but they must be opaque...but by far the most valuable of all is a small white oblong bead...one pound weight of these beads buy a tusk of ivory, at the south end of Tanganyika, so big that a strong man could not carry it more than two hours (Livingston 1959 [1875]:150-1).

Even in the African Diaspora, beads associated with the Indian Ocean trade retained importance. Newton Cemetery, located in southern Barbados, is a slave burial ground from the late 17th and early 18th centuries that contains first and second generation African and Afro-Caribbean slaves (Handler 2007, Handler and Corruccini 1982, Handler and Lange 1979, Singleton 1996:144). Burial 72, a male, was found with the largest number of grave goods in the entire cemetery. These burial items included European glass beads, drilled dog teeth, fish vertebrae, a Carnelian bead from Cambray, and seven cowry shells (Figure 8.6). Although Carnelian beads are stone, not glass, their Indian Ocean origins imply the enduring symbolic presence Indian Ocean trade had in African societies.

Interestingly, glass beads still hold significance in modern Batswana society including at Khubu la Dintša. Described in full in Chapter 13, Khubu la Dintša was used as a location for an ancestral healing ceremony known as *phekolo*. *Phekolo* ceremonies invoked the help of ancestral spirits to seek spiritual harmony and heal social and physical illnesses. Along the northeast edge of the hilltop past the Iron Age stone wall, a small cave was constructed to be a conduit to the spiritual world. A python was sacrificed near the cave (Denbow and Mosothwane 2010). Outside the cave, a basin was and remained filled with glass beads that serve as offerings to the ancestors (Figure 8.7). Glass beads at Khubu la Dintša, it appears, have remained significant from the Iron Age to the present.

Chapter Nine: Implications from Khubu la Dintša

High concentrations of glass and metal beads, the presence of prestige Lose ceramics, and stone walls at Khubu la Dintša present a number of implications associated with this dissertation's research questions. As defined in Chapter 5, these questions concern 1) Khubu la Dintša's chronology, general characteristics about the site, and the purpose of the stone walls; 2) the artifact assemblages and socioeconomic links between Bosutswe and Khubu la Dintša; and 3) how these links relate to power relations and the rise of inequality in the Bosutswe region and beyond. The radiocarbon dates and site layout of Khubu la Dintša, the stone walls, and prestige goods of Lose ceramics and glass beads, are discussed below. This data are used to build two competing scenarios about the role of Khubu la Dintša in the Bosutswe region. Although both scenarios will require further research to determine their accuracy, they at least serve as narratives through which to engage with ideas about the emergence of complex societies, inequality, prestige goods economies, and network power strategies. Regardless of interpretation, Khubu la Dintša adds to these theoretical discussions a case study that shows how a mosaic perspective of early polities lends explanatory power.

Khubu la Dintša (1220-1420 AD) was a small agro-pastoral settlement that was occupied during the Early and Middle Lose periods, perhaps chiefly the latter. There is also the possibility of a small Toutswe-period settlement. Defensive stone walls border the site. Prestige goods such as glass and metal beads and Lose ceramics suggest the site had high status in the Bosutswe region. A Lose house was also discovered. Social and political links between the Lose elite at Bosutswe and the population at Khubu la Dintša were likely strong. Two major events at Bosutswe may be related to the high status of this hinterland site. First, a shift in herding strategies from a centralized to a dispersed pattern may have provided economic opportunities in the hinterland to provide grazing grounds and tend cattle herds for the polity. These may have been opportunities for people living at these outlying settlements or elite relatives who were appointed to look after these more distant herds, or both. The need for resources such as water and grazing land, exacerbated by local land degradation may have influenced this growing dependence on the outlying areas. Economic valuations of cattle and environmental limitations may have limited the spread of inequality in the Bosutswe area as these groups were incorporated socially and politically into the Lose elite identity. Alternatively, the occupation of Khubu la Dintša may have been related to the major burning episode at Bosutswe sometime shortly after the collapse of Mapungubwe. Violence over the control of trade routes may have led to this fire, either a consequence of conflict or part of a symbolic shift in Bosutswe's allegiance to Great Zimbabwe. If the region was deemed unsafe or Bosutswe was deemed uninhabitable, some Lose elite families may have moved to more defensible locations such as Khubu la Dintša for a few generations.

SITE LAYOUT AND DATING

Radiocarbon dates obtained from five excavation units at Khubu la Dintša in 2011 date the site from ca. cal AD 1220-1420. As the cultural layers were shallow – between 35cm and 55cm in depth – this occupation was likely brief. The tight series of radiocarbon dates obtained suggest the occupation of Khubu la Dintša lasted only couple hundred years at most, and may have even been much shorter.

A central kraal (Unit 5) and midden area (Unit 4) were surrounded by household areas, as shown through the discovery of a house floor in Unit 7 and a household area in

Unit 6. Whether the kraal was used throughout the Lose period occupation was inconclusive. Grain bin foundations and excavation units containing ceramic sherds; fauna; glass, metal, and shell beads; and lithics suggest the site was a typical agro-pastoral settlement. Ostrich eggshell beads in various stages of their manufacture and lithic debris (Chapter 11) indicate household-level production.

The radiocarbon dates place Khubu la Dintša in the Early and Middle Lose periods in the Bosutswe regional chronology. During the Early Lose period (1200-1300 AD), Mapungubwe was a dominant trade center in southern Africa, and controlled much of the Indian Ocean trade in the region. Bosutswe became increasingly involved in this regional and long-distance trade. It is during the Early Lose period that the Lose elite, whose ceramics and household architecture mimic that of Mapungubwe, emerged at Bosutswe. The Middle Lose period (1300-1450 AD) involved the collapse of Mapungubwe and the rise of Great Zimbabwe. A burning episode across Bosutswe occurred shortly after the collapse of Mapungubwe. This fire may have been accidental, may implicate a violent struggle at the site, or may have been a symbolic burning of the old site as it was re-occupied by Middle Lose households. This burning episode has been noted in three areas of the hilltop (Denbow et al. 2008, Denbow in conversation 2013) and dates to 1270-1400 AD. Long distance trade at Bosutswe continued with Great Zimbabwe, and then declined after Great Zimbabwe's collapse. It was during the Middle Lose period that Lose elite identity was most sharply defined in material terms: Lose ceramics were more frequently decorated; Lose houses used red gravel for their floors; and bronze, glass beads, and iron tools clustered at Lose residences imply restricted access and control over prestige goods by Lose elites.

The abandonment of Khubu la Dintša at the end of the Middle Lose period suggests that Khubu la Dintša was a direct and indirect beneficiary of long distance trade.

One scenario below suggests Bosutswe would have relied in part on long distance trade for its success (Scenario 1). Wealth gained from that trade would have been partially invested in Khubu la Dintša to provide essential resources; Khubu la Dintša was intimately linked to those opportunities that Bosutswe provided and/or the problems that a shift in the regional polities created. The abandonment of Khubu la Dintša may have related to or hastened Bosutswe's decline.

STONE WALLS

Political and social differences between Khubu la Dintša and Bosutswe are implied by the construction of stone walls at Khubu la Dintša. Stone walls were not present at Bosutswe. The only other set of stone walls noted in the Bosutswe region was at another small hilltop site similar in defensive characteristics to Khubu la Dintša that had less preservation of its cultural material (Denbow in conversation 2011). Stone walls 60-70m in length bordered the eastern and western sides of the main occupation area at Khubu la Dintša. These walls curl inward towards the site for several additional meters along the hill's sides preventing access around the walls' ends. A break in each wall towards the center would have directed access to the site through specific entryways. The northern and southern edges of the site, which do not have walls, were naturally fortified by the high degree of slope on the sides of the hill. Another wall over sixty meters in length fortified a separate area of the hilltop that had a gentler slope. Based on their location, shape, and height, these stone walls appear to have been defensive in nature. They may have provided protection to the inhabitants of Khubu la Dintša and their possessions during a time of regional instability (Scenario 2). A lone metal spearpoint, found in the 2W2 wall unit, suggests that protection of the site may have been a priority.

Lose Ceramics

As Khubu la Dintša is only the third site where Lose ceramics have been found, these ceramics continue to enlighten what the Lose identity could have meant in terms of southern African regional dynamics. They constitute at least a quarter of the ceramic assemblage at Khubu la Dintša. The Khubu la Dintša Lose ceramics, as at Bosutswe, continued on long after Mapungubwe collapsed throughout the Middle Lose period and Great Zimbabwe's dominance. These decorations came at a time when the local population in the Bosutswe region was crystallizing a new identity associated with long distance trade, perhaps in contra-distinction to a Great Zimbabwe hegemony. The Lose identity became a tradition of ceramic pots and housing types, which signified not only local hierarchy, but may have been a political statement to the broader region.

Ceramics have a social and political dimension; Lose ceramic ties were likely intimate through marriages and political alliances that accompany cattle leases. Lose ceramics were closely linked to the emerging elite at Bosutswe, as they were spatially restricted, and coincided with status goods such as bronze, copper, elite housing, metal tools, most of the glass and metal beads. Therefore their presence at Khubu la Dintša represented a special relationship with the hinterland. Similarly, the discovery of a red gravel house floor in Unit 7, the same color as Lose houses at Bosutswe, suggests that connections between Khubu la Dintša and Bosutswe transcended economic exchange. Toutswe wares were found along with the Lose ceramics. As it was difficult to determine if these ceramics were mixed, Toutswe ceramics may represent one of three situations: 1) separate occupations at Khubu la Dintša that were mixed due to the shallow nature of the site, 2) commoner Toutswe people that were incorporated into the Lose identity through trade with Bosutswe, or 3) occupation by both these groups at the same time. In any of these scenarios, elite Lose ceramics and their dating remains the focus; social and political ties between Khubu la Dintša and Bosutswe existed in the Early and Middle Lose periods.

GLASS AND METAL BEADS

The presence of glass and metal beads throughout the occupation of Khubu la Dintša suggests it was intimately linked into the regional Indian Ocean trade. Glass and metal beads were part of a growing shift in a prestige goods economy, where individual wealth and status could be displayed through this medium. Glass beads (N=229) were found in both the earlier (Units 5 and 6) and the later excavation units (Units 4and 7), and were primarily clustered in household areas (Units 6 and 7). These beads were primarily black, turquoise, and yellow, although a few other colors such as red, white, yellow-orange, blue, blue-green, and green were also found. When compared to other southern African glass beads assemblages, more yellow beads and far fewer black beads were found than was expected. This may be due to local preference, and bead colors may have had symbolic significance. Bosutswe may have also controlled the dissemination of particular colors. Alternatively, these may have been the colors locally available through trade.

Of the twenty-two glass beads selected for chemical analysis from Khubu la Dintša, twenty-one were high alumina-soda plant ash beads, most likely from the Mapungubwe Oblate series (Dussubieux in conversation 2013). If these beads were primarily Mapungubwe Oblate beads, they may indicate a separate set of trading alliances and routes than the contemporaneous Great Zimbabwe hegemony. Furthermore, they may be another tie to Mapungubwe alliances, in the same way that Lose ceramics emulated Mapungbwe-style decorations. One high alumina-mineral soda glass bead was also identified. This East Coast or Khami Indo-Pacific bead was either an heirloom or associated with an earlier or later occupation at the site.

Thirty-seven metal beads were also found at Khubu la Dintša, fourteen of which were copper or bronze. Like glass beads, metal beads – especially those made of copper or bronze – were status items. These artifacts strengthen the argument that Khubu la Dintša had a significant amount of wealth for a small, hinterland site. When the metal and glass beads from Khubu la Dintša were compared to the Bosutswe assemblage, Khubu la Dintša had equal (for the metal) or even greater (for the glass beads) concentrations of these prestige goods versus the Lose period in the Central Precinct at Bosutswe. The presence of these glass beads and what the beads may represent are only implied at this point in time, explained below in the form of scenarios. These beads were part of increasing diversity of non-local artifacts and suggest trade connections throughout the region.

KHUBU LA DINTŠA: SCENARIOS

The stone walls, Lose ceramics, and high concentrations of glass and metal beads found at Khubu la Dintša suggest it played an important role in the Bosutswe region. Khubu la Dintša was occupied in the Early and Middle Lose periods of the Bosutswe chronology, although the primary settlement was during the Middle Lose period based on the ceramics and the radiocarbon dating. Each scenario considers the same set of data, but places a different focus on the possible implications: the first scenario, on local dialectics; the second scenario, on regional dynamics. Both may be true, and neither precludes the other from having impact of the trajectory of the Bosutswe region. The presentation of two scenarios, rather than just one, opens up the discussion of the development of complex societies to multi-scalar influences. At the least, they provide different perspectives on both what was occurring, and why it was happening. Although at first it may seem inconclusive, multiple scenarios better accommodate the complexity of the social landscape of Bosutswe region.

The first interpretation of the dissertation materials involves a switch in cattle herding strategies. Future faunal analysis and stable isotopic analysis of these animals is expected to bolster this hypothesis. An alternative reading of the data supports a temporary sheltering of Lose elite from Bosutswe at a defensive location during a period of regional instability. Future research of settlement patterns in the Bosutswe region may strengthen this argument. Regardless of interpretation, both scenarios relate to major events in the Bosutswe and regional chronology, and both support the study of local landscapes in relation to regional dynamics.

Scenario 1: Cattle Herding Strategies

The first scenario involves shifting cattle herding strategies as the economy and environment were impacted by the long-term settlement of Bosutswe. Participation in the Indian Ocean trade would have increased Bosutswe's wealth, perhaps also increasing the proportion of cattle to smaller stock at the site (Chapter 4). A preference for bridewealth in cattle characterizes southern African societies from prehistory to the present day (Huffman 2009, Kuper 1982) (Chapter 4). With the environmental degradation described earlier, cattle may have been leased to these smaller sites to gain access to adequate grazing grounds (Denbow et al. 2008) (Chapter 4). This would have provided an opportunity for a site such as Khubu la Dintša to gain wealth in long-distance prestige goods such as glass trade beads. Indeed, some Bosutswe elite may have even moved to Khubu la Dintša to supervise these herds. Strategies of similar land-use management have been documented in the region (Ekblom 2004, Hitchcock 1979, Mothulatshipi 2008,

J. Smith 2005). If related to changing cattle herding strategies in the Bosutswe region, Khubu la Dintša may have become an important outpost to sustain the population and its growing agricultural and pastoral needs. Those relationships were continually renewed through the receipt of glass and metal beads and inclusion in the Lose ceramic identity. Furthermore, high status goods may have been materialized through tribute. In exchange for the trade goods and cattle, these outlying settlements may have had political and economic obligations to the polity in terms of cattle, grain, or labor.

Protecting assets and interests included the most basic and mobile form of status – cattle. As cattle were the basis by which wealth was defined, gained, and lost, ensuring their security was likely of great concern. With the expansion of herds offsite at Bosutswe, another degree of vulnerability was layered on these assets. Assuredness that these cattle would be fed, watered, and protected must have come with some risk, requiring political prowess and constant negotiation. Stone walls would have protected such an investment.

In the Early Lose period, the importance of the Bosutswe region in long-distance trade increased sharply along with an influx of luxury goods. Glass beads may have been traded to increase cattle herd size and to consume more cattle, both traditional status markers in Bantu society (Kuper 1980, 1982a, 1982b; Plug 1996, 2000; Thorp 1984, 1995). As herd sizes increased and pastoral lands reached grazing capacity, herding strategies appear to have shifted from a centralized to a dispersed grazing pattern. Bosutswe may have become increasing reliant on the hinterland in order to sustain its population and growing agricultural and pastoral needs. Khubu la Dintša may have been one of these dispersed trading hubs, taking advantage of these economic opportunities to secure social status and for political gain. Although the data was inconclusive, it is likely that the kraal at Khubu la Dintša was at least partly used in this period to keep animals inside the stone walls. This contrasts with the pattern at Bosutswe, where the main kraal was moved from the center of the settlement in the Lose period. Relationships between Bosutswe and dispersed hubs would have been continually renewed through the receipt of glass beads and prestige ceramics, indicating trade obligations and alliances through marriage. Bosutswe likely still had control, however, given the higher frequency of metal and shell beads as well as gold and bronze at Bosutswe.

The analysis of the faunal remains from Khubu la Dintša will be vital to testing this scenario in the future. If Bosutswe and Khubu la Dintša were tied through cattle, the presence of cattle versus smaller stock, and domesticated versus wild animals should be high in the Khubu la Dintša assemblage. Furthermore, the diet of these cattle should indicate high quality grazing grounds, as indicated by a C_4 stable isotopic signature in the fauna. These are avenues for further research, however, discussed more fully in Chapter 13.

Scenario 2: Regional Instability

Another major event at Bosutswe also deserves mention. At Bosutswe, a major burning episode that spread across the site distinguished the Early Lose from the Middle Lose period (Chapter 4). This burning event corresponded to Mapungubwe's collapse and Great Zimbabwe's rise to power in the regional political economy. There may have been great political instability in the region between the Early and Middle Lose periods, and reassertion of dominance over access to interior trade routes. The burning episode at Bosutswe that marks this Early and Middle Lose transition may have represented a symbolic – potentially violent – response between two trade partners. This would be particularly true if Bosutswe's relationship with Great Zimbabwe was competitive, rather than submissive. Again, the stone walls imply such turmoil. Khubu la Dintša may have served as a temporary refuge for Bosutswe elites during the Middle Lose period. If it served as a refuge for the Lose class during this period, Khubu la Dintša may have been one of several defensive locations to which the Bosutswe elite may have dispersed. These hilltops would have offered a greater degree of protection than larger, more exposed Bosutswe. This alternative scenario is favored by a close interpretation of the radiocarbon dates and the shallow deposits at Khubu la Dintša. The primary settlement at Khubu la Dintša may have occurred only for a few generations in the Middle Lose period, perhaps even for just a couple of decades, until Bosutswe was declared safe, or at least habitable again. A small number of households may have remained behind at Khubu la Dintša after this main occupation. In this scenario, glass and metal beads would have related to a Lose population from Bosutswe that settled at Khubu la Dintša. If some of the Lose families temporarily settled at Khubu la Dintša due to regional instability and warfare, the glass beads would be valued trade goods that these families would have brought with them. If Lose families lived concurrently with surrounding groups, it may have been an opportunity for these other hinterland communities for more equitable status, an opportunity arising from necessity for survival.

At Bosutswe, it is after the burning episode that Lose identity became more distinct at the site, and bronze appeared. The Lose elite established spatially separate households, differentiated by their color and architecture, and controlled access to many of the prestige goods at the site. This influx of wealth at Bosutswe as well as solidification of a separate Lose identity tied to long-distance trade may have related to Bosutswe's changing role in the wider region. Lose ceramics at Khubu la Dintša and the site of Lose may have signified association, identification, and control over the region south of Great Zimbabwe hegemony that lay between Bosutswe and the Lose site. This may have related to a power move by Bosutswe to present itself to neighboring polities as a viable power to be negotiated with in order to access their material goods (cattle) and access trade route and trade relationships across the Kalahari. This may also account for the presence of Lose ceramics and the comparative dearth of prestige goods at the site of Lose 100 kilometers to the south (Denbow in conversation 2013). Great Zimbabwe may have challenged Bosutswe's authority in the region. This is supported by both the defensive nature of the site Khubu la Dintša, and the fact that Zimbabwe settlements were located only 90km to the northwest in the Makgadikgadi Pans and to the east at Majojo near Serule (Denbow in conversation 2013). Trade during the Middle Lose period may have been profitable for Bosutswe, but it would not have been without danger.

If this scenario is correct, major events at the regional level – the collapse of Mapungubwe and the rise of Great Zimbabwe – strongly impacted local settlement patterns in the Bosutswe region. If true, settlement patterns during the Lose period in the Bosutswe region would reflect a move to more defensible locations. This interpretation could be better supported through further study of settlements located within and beyond the Bosutswe region. Although this is a very different interpretation of the site of Khubu la Dintša, one fundamental argument of this dissertation remains the same: regional dynamics most likely affected local dynamics, and these local dynamics impacted the trajectory of complex societies in southern Africa.

IMPLICATIONS FOR STUDIES OF COMPLEXITY AND INEQUALITY

In southern Africa, regional dynamics impacted local communities. The wealth and importance and rise and fall of Bosutswe was subject to shifts in the Indian Ocean trade, the regional dynamics that involved trading partners, and the Portuguese invasion and disruption of trade routes. The social and political impacts of growing wealth in cattle resulted in a divergence in status of the members of the community at Bosutswe.

The Lose peoples at Bosutswe placed cultural affiliations with the outside trade community of Mapungubwe. As the Lose spatially separated themselves from the non-elites at Bosutswe, they adopted Mapungubwe symbols in their ceramic and housing styles and yellow bronze that looked like gold. Performance of status through regionally recognized indicators of wealth was not without the display through universal symbols: metals, beads, and cattle. Regional as well as local influences shaped how wealth was defined and displayed. The wealth generated from regional trade manifested not just in status goods such as beads but also far more practical items such as cattle and iron tools. Social reproductive goals, such as the expression of class, were apparent in households or through comparison of factions.

Implications of this dissertation research, regardless of scenario, support the development of a prestige goods economy that was linked to long-distance trade. Luxury goods and status through the presence of prestige goods in the Bosutswe region included metal and glass beads. These were found in abundance at the hinterland site of Khubu la Dintša. Wealth in luxury trade goods supplemented traditional forms of wealth such as cattle. An elite Lose class monopolized access to long-distance trade in the Bosutswe region, a position they distinguished through Lose-style ceramics that indicated such connections. Expansion of cattle herds, a growing population, and environmental limitations such as grazing lands and plant and soil degradation provided opportunities to outlying communities. Inclusionary network strategies by the Lose elite at Bosutswe may account for the high status of these outlying areas. Mutual dependence and the spreading of wealth may have limited the development of inequality in the Bosutswe region, leading to a more heterarchical complex society.

If instead Khubu la Dintša was a safe haven for the Lose elite during a period of political instability, the same principles of a prestige goods economy and network power strategies apply. The Lose elite would still have based their wealth in the control over luxury trade goods such as glass and metal beads. The Lose elites at Bosutswe still developed their own style of ceramics and architecture to differentiate themselves from the rest of the local community. If Lose elites at Bosutswe attempted to expand their power throughout the region after the collapse of Mapungubwe, trade connections would have involved network strategies to control the production and exchange of resources. Power was likely gained through differential access to social networks and people (D. Miller 1989). Such power strategies may have been precarious or contentious in the regional political climate, leading to decentralization, fortification, and potentially conflict.

Chapter Ten: Geophysical survey at Mmadipudi Hill

The magnetic susceptibility survey conducted at Mmadipudi Hill was one of if not the first archaeological geophysical applications in Botswana. Mmadipudi Hill (~550-1200 AD) is an Iron Age site in the Bosutswe region approximately four kilometers west of Bosutswe. The results showed a Central Cattle Pattern settlement, its houses and their fences, and their relation to community centers and cattle kraals. This perspective would not have been possible through excavation alone. Moreover, geophysical survey enabled precise placement of excavation units over houses. This ability to target subsurface features will prove invaluable for future excavation as it optimizes excavation resources. Geophysical survey helps save labor, money, time, and minimizes the irreversible damage that excavation unfortunately causes.

A test trench measuring 1x4m in size confirmed the presence of a house floor 100-150cm in depth. The material excavated provided cultural context for the Iron Age occupation. Although small in scope, this excavation yielded artifacts related to the larger sets of issues the Bosutswe region faced as Indian Ocean trade transformed the local political economy. The nature of the relationships between Bosutswe and its surrounding communities likely evolved due to the rise of a prestige goods economy, growing inequality, environmental degradation, and increasing dependence between the polity and its hinterland. The occupation at Mmadipudi Hill would have been at the beginning of these changes, and would potentially have been abandoned if the expansion of Bosutswe caused a conflict in power or if the surrounding landscape had been overgrazed. If nothing else, Mmadipudi Hill provides a snapshot of what the region may have looked like immediately prior to the Lose period. Below, short discussions of these finds provide further characterizations of the site, its function, and daily activities.

Magnetic Susceptibility

Low field magnetic susceptibility is a near-surface geophysical method becoming increasingly popular in the world of archaeological geophysics (Conyers et al. 2008; Ernenwein 2008; Ernenwein and Koons 2007; Tite 1972; Tite and Lenington 1975; Tite and Mullins 1970, 1971). As with other geophysical techniques, it is often used in conjunction with soil analysis or other geophysical techniques such as ground penetrating radar (GPR) and magnetometry. Magnetic susceptibility has the ability to locate features, define them, and help explain their formation and the post-depositional processes that impact them. Rachel Dalan (2006) provides an excellent overview of archaeological applications of magnetic susceptibility. Defined as “the measure of a material’s ability to be magnetized," magnetic susceptibility utilizes a property that quantifies "the response of a material to a weak magnetic field” such as the earth (Dalan 2006:62). Magnetic susceptibility measures the presence of magnetizing features through frequency variation (delay) between a sample’s magnetization and the inducing (i.e. magnetizing field), measured in the presence of this magnetizing field. The ratio between the two can detect where features are and are not present. Increasing frequency dependence relates to an associated increase in magnetic grains. Spatial variations caused by higher or lower susceptibility can be differentiated. This provides an advantage over a magnetometer, another geophysical survey technique used in archaeology, which measures only the net effect of a magnetic field.

Surface layers of soil are more magnetically enhanced than subsoil layers due to the conversion of magnetic oxides and hydroxides to more highly magnetized forms.

Anthropogenic surfaces also experience an increase in anhysteric remnant magnetization (ARM). ARM is an increase in the concentration of magnetic grains as a result of fires (naturally-produced or human-produced) or from pedogenic enhancement of the soil through inorganic or organic pathways (chemical changes to the soil or bacteria) (Dearing et al. 1996; LeBorgne 1955, 1960a, 1960b; Maher and Taylor 1988). Organic material is introduced into the soil matrix in midden, kraal, and household and activity areas. Fires, ditches, and pits and middens enhance (or disrupt) the magnetized topsoil and build up to create a site signature. Enhanced magnetic fields persist until they are gleyed (reduced in iron). Therefore, even after ancient topsoil and features are buried due to post-depositional processes, they still give a magnetic signature (Maher 1986).

The utility of magnetic susceptibility depends on a number of factors, including climate, geological strata, soil types, the layers of soil, and the depositional and post-depositional processes (Dalan 2006:164; Evans and Heller 2003, Maher 1986, Maher and Thompson 1999, Rummery et al. 1979, Thompson and Oldfried 1986, Tite and Mullins 1970). These processes include the extent of occupation, the nature of activity, and other human variables. Temperature, chemistry, and porosity all impact the magnetization of soil and the resulting signal. Magnetic drift limits the depth to which magnetic susceptibility can be precise. This depth varies depending on the degree of surface vegetation, soil compaction, and roughness of the ground. Proximity to sources of magnetic noise such as power lines, fences, and pipelines also limits its application.

THE GEOPHYSICAL SURVEY AT MMADIPUDI HILL

Mmadipudi Hill is located four kilometers west of Bosutswe and is approximately four hectares in size (Figure 10.1 and 10.2). As such, the hill is larger than Bosutswe and the occupation area at Khubu la Dintša. Erosion is most extensive on the western half of the site where there is less evidence of occupation. The center of the site contains a large central kraal and midden area, as indicated by both the vegetation (*Cenchrus ciliarus*) and its topographical rise over the surrounding areas. To the east, a higher point on the hilltop contains another kraal, although it is smaller than the main one. Outcroppings of silcrete boulders and bedrock are more frequent in this area. A test unit dug by Dr. James Denbow in the mid-1980's at Mmadipudi Hill revealed cultural deposit to approximately 1-1.5 meters in depth. Minimal vegetation and ground cover, a result of grazing goats from a cattle post located at the hill's base, also favored geophysical survey here over Bosutswe.

Mmadipudi Hill was one of three Iron Age sites in Botswana for the geophysical pilot study, chosen for their geological and climatic variations that might impact the usefulness and applicability of geophysical techniques. The other sites, Nyungwe and Lose, are not discussed here, but are forthcoming elsewhere. At Mmadipudi Hill, 0.5 hectares was surveyed on the eastern side of the central kraal from August 13-16, 2011. Geophysical investigations included a ground penetrating radar (GPR) using a GSSI SIR-3000 with 400 MHz antenna and survey wheel attachment and an electromagnetic induction (EM) survey using a Geonics EM38-MK2 conductivity meter (Figure 10.3). The EM38-MK2 simultaneously measures conductivity and magnetic susceptibility with 1m and 0.5 coil spacing for two distinct depths. The EM was extremely effective in identifying kraal areas, housing clusters, and a number of individual houses. The GPR had a damaged antenna and did not produce useable data.

Mmadipudi Hill was selected for geophysical survey for a number of reasons. As mentioned above, goats had cleared away most of the surface vegetation. Although the kraal was visible from the surface, the survey team wanted to confirm that kraal area provided a strong signal in contrast to other features. The other highly prioritized objective of the survey was the location of other site features, in particular households. Houses, according to Huffman's Central Cattle Pattern, would be clustered near the kraal area. The reported cultural depth of Mmadipudi Hill, 1-1.5 meters, made identification and location of households a distinct possibility. This amount of cultural deposit is shallower than at Bosutswe, which contained 2.5-4 meters in certain areas. This shallower depth makes Mmadipudi Hill a better case, as signal strength and magnetic drift favor survey of deposits of one meter or less (Ernenwein in conversation 2011).

The survey encompassed an area of one hundred meters in length north to south and between forty and sixty meters east to west at meter-wide intervals. The geophysical survey area ran lengthwise between the saddle of the two kraals (Figures 10.4 and 10.5). The software program Geodata was used to process the imagery. Eileen Ernenwein (Center for Advanced Spatial Technologies, University of Arkansas; East Tennessee State University) conducted the survey and data analysis; Katie Simon (Center for Advanced Spatial Technologies, University of Arkansas) and the author assisted the survey.

The magnetic susceptibility survey yielded results shown in Figure 10.6. The kraal area was easily distinguished from the surrounding settlements, providing a strong negative signal. Three clusters of highly positive, circular areas surrounded the kraal, situated 10 meters off its edge. Each of these clusters was 15-20 meters in diameter. Each cluster contained three to five smaller, highly positive circular areas. These smaller circles were each 3-4 meters in diameter. The larger clusters were surrounded by a negative reading about a meter in width.

The settlement pattern detected through geophysical survey matches Central Cattle Pattern sites (Huffman 1982, 1986, 1996, 2007). A salvage excavation associated with the site of Kgaswe provides good reference for interpreting the geophysical results

(Figure 10.7; Denbow 1984, 1986). Kgaswe, located southeast of modern-day Serowe, was an Iron Age site that was bulldozed in the 1980s. Three or four household clusters were located fifteen meters off the kraal's edge. These clusters each contained two to six houses per cluster. Burials, likely associated with these households, surrounded the clusters. Thorn fencing likely surrounded these house clusters and their courtyards. In later historical times, stone walling replaced this thorn fencing, and served the same function (Denbow 1983, 1999; Sadr and Rodier 2012).

Magnetic susceptibility (MS) data can correspond with the intensity of human occupation on the surface (Ernenwein 2008). The areas of high and low MS seen in the geophysical results from Mmadipudi Hill correlate to this assertion and relate to Kgaswe settlement features. A central kraal was detected, around which there were petal-like household clusters of high anthropogenic activity. The small circular areas within these clusters were probably two to four houses that each made up a family compound. These houses were signaled by high MS values. Thorn fencing would explain the rings of low magnetic susceptibility values surrounding the clusters.

Geophysical surveys, especially in the context of pilot studies, also require testing to confirm the results. Therefore, a 1x4m unit was placed in the northeastern area that was surveyed, oriented in an east-west direction. The trench was placed over an area that provided high MS anomalies, suggesting by its shape, size, and location that it was a house floor in one of the housing clusters. The western half of the unit covered an area of high MS, while the eastern half of the trench was located in an area of low MS values. This placement would allow excavation to come down on part of the house. This strategy permitted simultaneous testing of high and low MS values and their relation to house and non-house features.

ARCHAEOLOGICAL TEST EXCAVATION AT MMADIPUDI HILL

The 1x4m test trench was excavated in Tile 1, a northeastern 20x20 meter subarea of the geophysical survey. The unit ran 7-11 meters east of the southwest corner of Tile 1, and 1.5-2.5 meters north of that corner. The Mmadipudi Hill test unit's names reflected this location in Tile 1. The four 1x1m units associated with the test trench were labeled 7E1.5N, 8E1.5N, 9E1.5N, and 10E1.5N from west to east. Fifteen levels (150cm) of cultural material were excavated. The base of these units ended in compact, sterile reddish-brown soil associated with silcrete bedrock. Test excavations resulted in the discovery of a house 100-150cm below the surface. This house was best evidenced in the significant quantities of daga located in the house units. Artifacts associated with the trench included diagnostic Iron Age pottery, faunal remains, ostrich eggshell beads, Indian Ocean glass beads, and lithics. Ceramics (N=7,483) comprised a mixture of Taukome and Toutswe cultural components. The glass beads and lithics underwent a secondary set of analyses: chemical analysis using an LA-ICP-MS and use-wear analysis, respectively. The chemical analysis is discussed briefly, and the lithic analysis is in the following chapter (Chapter 11).

Ceramics

Decorated ceramics from Levels 1-6 were associated with a Toutswe occupation (Chapters 2 and 7). Characteristics of ceramics from these levels at Mmadipudi Hill included: stamping located around the neck on raised strips and the lips of bowls, diagonal incised lines as bands and as fill for triangles, and singular bands of incised dashes (Figure 10.8). Levels 10-15 contained Taukome ceramics (Chapters 2 and 7). Taukome decorations from Mmadipudi Hill included: stamped bands, single or multiple bands of parallel hatching, bands with parallel stamping fill, incised bands of diagonal stamping, and multiple bands of incised lines (Figures 10.9). Levels 7-9 were mixed or indeterminate, due to the small sizes of the sherds, their degradation, and generalized decoration (such as a singular incised line) that could be interpreted as either Taukome or Toutswe.

Three imported ceramic sherds were found in Unit 7E1.5N, Level 2. These were identified as Eiland sherds (Huffman 1989, 2007) and suggest trade ties to areas of modern-day South Africa (Figure 10.10). Eiland sherds have also been found at Bosutswe (Denbow 1999, Denbow et al. 2008).

High concentrations of ceramics and bone in Levels 1 and 2 suggest deflation at the site (Figure 10.9). The corresponding strata from the unit's profile suggest this deflation affected the first 10-15cm of deposit (Figure 10.11). A far more typical range of 250-600 sherds per level (62.5-150 sherds per $0.1m^3$) continued to the end of Level 14. Peaks in ceramic counts in Levels 2, 5-7, and 10-13 suggest specific concentrated activity in these periods of occupation. The percentage of decorated ceramics decreased from Taukome to Toutswe (Figure 10.12). This may either relate to a decreasing trend in decoration between Taukome and Toutswe ceramic traditions or the frequency of decoration of ceramics located in houses versus outside of houses.

House levels

Levels 11-15 (100-150cm), the "house levels," contained burned daga (N=167), primarily concentrated in Unit 7E1.5N (N=117/1094g) (Table 10.1 and Figure 10.13). This corresponds well with the geophysical prediction that the house would be located in the western part of the trench.

Also of note was the lower fragmentation rate of the ceramics and the greater frequency of decorated ceramics in the "house levels": 8.81 g/sherd (mean = 7.72 g/sherd; other units average 7.38 g/sherd) and 5.2% of the sherds with decoration present (mean = 3.6%; other units average 2.8%). Again, these size and decoration anomalies may relate to their connection with the household area, or may simply be a product of deposition and preservation. Further study of households may help clarify if there is a pattern. If so, they may be telling of ideologies of identity and cultural affiliation, daily activities, or on the simplest level, may help indicate if a house is located in the proximal area where larger, more decorated sherds are found.

Other materials associated with the "house levels" include ceramic sherds (N=1,819/16,033g), bones (3254g), fifty-three complete ostrich eggshell beads, eleven ostrich eggshell beads roughed-out (in preparation), forty-three broken ostrich eggshell beads or eggshell fragments, two cane glass beads (light blue) and one rounded glass bead (cloudy blue), two pieces of slag, and seventy-six lithics (bipolar nodules, flaking debris, cores, and tool elements. Tool elements identified (N=4) include a wedge, bifacial segment, the midsection of a bifacial knife, and a prismatic blade. These are discussed in Chapter 11.

Shell beads

Ostrich eggshell beads (N=354) were found at Khubu la Dintša. This count includes whole, broken, and beads in preparation. In addition, 60 pieces of ostrich eggshell, likely the raw material used for manufacturing the beads, were also recorded. Bead totals mimicked peaks in ceramic concentrations. Level 1 suggests deflation. Peaks in bead concentration in Levels 2 and 5-7 (Toutswe), and 10-12 (Taukome) suggest these levels correspond to different occupation events. Bead totals were noticeably depressed in Levels 3 and 4, and again towards the bottom of the excavation unit in Levels 13-15. The presence of beads of various stages of manufacture suggests that bead manufacture likely place at the household level, rather than obtaining them through trade. Levels 12 and 13 were particularly heavy with respect to the concentration of roughened beads and ostrich eggshell raw material, accounting for 62.2% and 37.5% of the bead assemblage in these levels (Figure 10.14). Level 12 had a high number of ostrich eggshell fragments (N=18), reinforcing the idea that these numbers represent household activity.

Land snail (*Achatinidae*) and river mussel (*Mutelidae*) beads were also found. Levels 6 (N=12) and 8-10 (N=36) had particularly significant numbers of these "other" shell beads. These concentrations were greater than in the other levels. These levels correspond to the earlier Toutswe period at the site. Quite possibly, new trade routes between the African interior and the Bosutswe region were developing at this time (Chapters 3 and 7). The near absence of "other" shell beads in the earlier, Taukome house levels suggest these trade routes were less active before this period. Low concentrations in the upper 50cm of the deposit may be indicate these trade connections had shifted or disappeared during the latter part of Toutswe period. Alternatively, they may be testament to the changing role of Mmadipudi Hill vis-à-vis an emerging hierarchy in the Bosutswe region. Bosutswe may have controlled access to "other" shell beads at and after this period of time. These scenarios are, of course, hypothetical, but do raise questions to be addressed in future research (Chapter 13).

Glass beads

Eleven glass beads were discovered in the 1x4m meter trench at Mmadipudi Hill. From these beads, four were chosen as part of a larger chemical and macroscopic study by the author (Chapter 8). These beads were analyzed using an LA-ICP-MS in July 2012 at the Field Museum in Chicago under the supervision of Dr. Laure Dussubieux. Background of the use of LA-ICP-MS chemical analysis of Indian Ocean glass beads is covered in Chapter 8 (after Brill 1999; Dussubieux 2001; Dussubieux and Gratuze 2003;

Dussubieux et al. 2008, 2009; Gratuze 1999; Robertshaw et al. 2010; Wood et al. 2012). The Mmadipudi Hill glass beads are discussed here, however, because they extend the chronology of Mmadipudi Hill.

Both the Zhizo bead series and Indo-Pacific bead series overlap in the Iron Age occupation at Mmadipudi Hill. Zhizo and Indo-Pacific beads are easily distinguished through their chemistry, as Zhizo beads are made from low alumina soda plant-ash glass and Indo-Pacific beads are made from high alumina mineral soda glass. As discussed in Chapter 8, soda types are indicated in the percentage of magnesium oxide in glass beads.

Three of the four beads chemically analyzed contained relatively high amounts of soda (13.4-14.2%) and magnesia concentrations higher than 1.5%, indicating the use of soda plant ashes. Alumina concentrations were relatively low (3.6-3.9%). These compositions concur quite well with the compositions of Zhizo series beads (Robertshaw et al. 2010, Table 10.2). These three, as expected, overlapped with the Taukome levels, including Levels 10 and 14. The other bead, from Level 7, has a high level of soda (18.7 %) but contains a much lower magnesia concentration (0.5 %) indicating the use of mineral soda. Besides, this bead has a high alumina concentration (7.7 %). This bead can be attributed to the Indo-Pacific bead series with a South Asia origin. The three Zhizo beads were blue (10.0BG 3/6), tubular in shape, small or medium in size, and short or standard with respect to their length ratios (see Chapter 8 for morphological categories). All these characteristics are standard for Zhizo beads. These beads originated in the Middle East, likely east of the Euphrates River in Iran (Robertshaw et al. 2010, Wood 2000:174, Wood 2011). Looking at cobalt and associated trace elements can help determine the origin of the glass too. M814-1 and 2 and M810-1 contain cobalt with concentration ranging from 96 to 228 ppm. These beads also contain higher amounts of manganese (1 % and 0.5 % for respectively M810-1 and M814-1) and zinc (especially for

M810-1 and M814-2; 131 ppm and 143 ppm, respectively). The general composition of the beads and the cobalt ore used to color them seem to indicate both a Middle-Eastern origin for the beads with Iran as a possible region of production for the glass.

The low magnesium oxide values in bead M75-1_1 indicate that it was made from soda aluminum glass, and, as such, it was an Indo-Pacific bead of south Asian origin. Whether this bead was a K2 Indo-Pacific bead or an East Coast Indo-Pacific bead is difficult to distinguish chemically, although some variations in iron, titanium, chromium, and rubidium exist (Robertshaw et al. 2010:1905). Bead color and shape help this analysis, as discussed in Chapter 8 (Wood 2011). However, both K2 Indo-Pacific and East Coast Indo-Pacific beads could be blue-green. On the basis of its length (long), color (translucent-transparent blue-green) and lower iron, titanium, and chromium levels versus the East Coast, Indo-Pacific bead identified in Chapter 8, it is possible that M75-1_1 was a K2 Indo-Pacific bead.

The replacement of Zhizo beads from the Middle East with K2 Indo-Pacific beads from south Asia reflected a major change in trade relations between southern Africa and the rest of its Indian Ocean trading partners. Importantly, it also implied the continued occupation of Mmadipudi Hill through the Toutswe period. K2 and East Coast Indo-Pacific beads were actively traded from the mid-10th century until the late 12th or early 13th century (Wood 2011). This is a longer occupation than indicated by previous testing, and suggests that Mmadipudi Hill's occupation continued through the Toutswe period.

An examination of the glass beads in relation to their respective levels at Mmadipudi Hill gives a more precise idea of when transition between Taukome and Toutswe traditions occurred. Of the eleven beads found at Mmadipudi Hill, the majority of these beads were found in the Taukome levels (N=10). The highest concentration of these beads was located in Level 10, where four blue and turquoise glass beads, including one Garden Roller bead, were found. A Garden Roller bead had previously been found at Bosutswe, as indicated in Robertshaw et al. (2010). The discovery of the latter suggests that Level 10 may be later than previously believed. Garden Roller beads are a type of molded bead, made from crushed Indian Ocean glass beads and reheating them in a mold to create a larger, often multi-colored bead (Chapter 7). Garden rollers are associated first with K2 and later with Mapungubwe, and therefore occurred only after 1000 AD. If garden roller beads are found in the Bosutswe region, they should relate to Toutswe cultural levels. The Garden Roller bead in Level 10 was found in association with two small but wide opaque-translucent blue (7.5B 4/4) Zhizo beads and one small transparent turquoise (2.5B 6/4) Indo-Pacific glass bead (Figure 10.15). This mixture suggests that Level 10 was both a Taukome and Toutswe level. Close examination of the stratigraphy from Level 10 affirmed there an intrusion in part of the unit of a light brownish-grey lens that begins in Levels 8 and 9 (Figure 10.16). The mixture of Zhizo beads in Unit 9E 1.5N was likely a result. Even if associated with Unit 8, the location of the Garden Roller bead deep into Mmadipudi Hill's stratigraphic layers implies that settlement at Mmadipudi Hill was not just present but active through much of the 11^{th}-13^{th} centuries AD.

IMPLICATIONS FROM THE MMADIPUDI HILL GEOPHYSICAL SURVEY

Geophysical survey and the archaeological test excavation at Mmadipudi Hill provided productive results. Magnetic susceptibility detected the signature for Central Cattle Pattern settlement patterns. The main kraal area, housing clusters, individual houses, and thorn fencing around the clusters were identified. Housing clusters and individual houses provided high MS values, while the kraal and fencing areas gave low MS values. A 1x4m test unit verified feature classification through the discovery of daga in a house area. The survey team placed the unit partially in (western half) and partially out (eastern half) of the MS anomaly associated with the house. The daga was concentrated in the area of high MS values thought to be the house floor in Levels 11-15. These levels suggest the area's geology allows for deep penetration by MS into cultural layers. Moreover, the success of the survey demonstrates that Iron Age features are highly visible in magnetic susceptibility surveys.

Although small in size and extent, the artifact assemblage associated with the archaeological test unit at Mmadipudi Hill allowed for a number of insights about the site. Mmadipudi Hill appears to have been occupied continuously during the Taukome and Toutswe periods. Two separate Toutswe (Level 2 and Levels 6-8) and one Taukome (Levels 11-13) occupations were identified. In the Taukome and Toutswe periods, Mmadipudi Hill was a cattle post following the Central Cattle Pattern, containing a fairly standard set of Iron Age materials – ceramics, faunal remains, shell and glass beads, and lithics. Chemical analysis through Indian Ocean glass beads confirms Mmadipudi Hill and the Bosutswe region's early connections to the Indian Ocean trade; both Zhizo and Indo-Pacific beads were found. This occupation may have even continued on until the Early Lose period.

Survey and excavation at Mmadipudi Hill also provided insight into a changing regional settlement pattern in the Bosutswe region. Mmadipudi Hill was a neighboring settlement to Bosutswe occupied prior to the Lose period. Like Bosutswe, it also participated in some trade with surrounding regions, evidenced by glass and shell beads found at the site. Bosutswe may not tightly control long-distance trade in these early periods, but this is subject to further research. It appears that Mmadipudi Hill was abandoned around the late Toutswe or Early Lose period. At this time, Bosutswe emerged as the center for local and long-distance trade (Chapter 4). This influx of wealth and expansion of power may have impacted the surrounding settlements such as

Mmadipudi Hill (Chapter 11). Mmadipudi Hill may have been too close to the growing population at Bosutswe, unable to compete for resources such as grazing grounds and access to water. Similarly, overexploitation of these resources by overgrazing and increasing populations in long-term sedentary settlements may have forced the Mmadipudi Hill population to relocate. Further research at Mmadipudi Hill may tease out the effects of the regional dynamics on local dialectics.

Chapter Eleven: Special Analysis of the Lithics Collections

The abandonment of stone tools for metal tools is a generalized linear narrative of technological advancement that has separated the Stone Age from the Iron Age in Africa. Yet, in the Iron Age, stone tools continued to be useful and lithics were used in a variety of contexts (S. Rosen 1997). These stone tools were not limited to lower status sites, and likely were traded between communities as valued items. Two hundred and five lithics from Mmadipudi Hill and 136 lithics from Khubu la Dintša are testament to the substantial presence of lithics in the Bosutswe region. These lithics may have been traded, as earlier work suggests (Thebe 2004, Denbow 1999); however, they were also used at these sites. The populations at Mmadipudi Hill and Khubu la Dintša were able to utilize a variety of coarse- and fine-grained stone materials such as chert, basalt, quartzite, and silcrete competently to create stone tools. These were highly functioning tools, retouched and reused. The utilization of lithic technology shows functional opportunism rather than an abandonment of earlier knowledge. It demonstrates accommodation and consideration for the time, effort, and availability of the materials involved for tools and their use. Although the collections were small and not necessarily elaborate, the presence and use of lithics at Mmadipudi Hill and Khubu la Dintša have important implications for the role of stone tools in the Bosutswe region and beyond.

Previous Lithics studies in Botswana

Much of the foundational research on lithics in Botswana concentrates on Stone Age contexts (Robbins 1992, Walker 1995, Robbins and Murphy 1998). Stone Age sites provide context for the types of materials, technologies, environments, and resource adaptations involved in lithic manufacture and use in the area (Early Stone Age, Cooke

1979, Segadika 1995; Middle Stone Age, Brookes and Yellen 1977, Kuman 1989, Tlou and Campbell 1996, Segadika 1995, Walker 1995; Late Stone Age, Deacon 1984, Robbins 1990). Lithic artifacts are also found at Iron Age sites, but rarely discussed are the roles they played (Hendrickson 1986, Phaladi 1991, Thebe 2004, Weedman 1992; cf. Segobye 1994, van Waarden 1990). Like Stone Age peoples, Iron Age communities used stone tools to exploit resources. Lithics varied based on the task at hand and what materials could be obtained (Thebe 2004). Lithics were used by both agropastoral and hunting and gathering communities (Phaladi 1991, Thebe 2004), and may indicate settlements where both lived (Denbow 1990, 1999; Thebe 2004). Weedman (1992) documented lithic trade networks that extended across Botswana beginning after 900 AD. Iron Age shows lithic artifacts were not only used but also valued. The concept of Iron Age trade should be broadened beyond ceramics, animals, and beads to include these lithics (Weedman 1992).

Like many other trade products, both the raw materials for lithics and their manufacture were often controlled. Denbow (1999) notes chert was mined, worked into cores and blanks, brought to Bosutswe, and cached there. Denbow suggests this chert was for trade with neighboring communities rather than internal use. The major polities in the region generally lacked any significant concentrations of formal tools, a pattern seen at Bosutswe (Weedman 1992) as well as Toutswemogala and Thatswane (Denbow 1982, 1986, Lepionka 1979). Backed segments, thumbnail scrapers, and blade cores have been found at lower status settlements such as Taukome, Maipethwane, and Matlapaneng (Denbow 1982).

Since metals were highly valued, there is a possibility that not everyone had access to metal tools. Using stone tools may have been the only choice that some people had. For example, it is clear that at Bosutswe, iron tools were owned by Lose elites and stored in their houses. Lose elites may have loaned these metal tools to commoners at the site, or to surrounding communities. Non-elites may have chosen to take care of tasks with stone tools if metal tools implied social obligations deemed too burdensome. Perhaps simpler activities did not warrant the use of tools considered highly valuable. There may not have been sufficient numbers and types of metal tools to complete all the tasks necessary for everyday life. Alternatively, some tasks might have been as effectively or better performed with stone implements.

Lithics were likely intimately involved in daily life in these Iron Age communities. At Bosutswe, ad hoc lithics were used in a variety of contexts – cutting, scraping, and polishing – and on a variety of materials – grass, bone, meat, and wood (Thebe 2004). Further studies of lithics in the Bosutswe region may provide a good case study for the use of lithic tools and their relationship with status.

THE LITHICS COLLECTION FROM MMADIPUDI HILL AND KHUBU LA DINTŠA

Three hundred thirty-eight lithics and ecofacts weighing 1623.6 grams were recorded in the $6m^3$ of excavated material from Mmadipudi Hill (Figures 11.1-11.3). Each of the ecofacts and artifacts was classified into one of the following categories, as suggested by Dr. Marvin Kay: as a natural cobble or cobble fragment (ecofact); shatter, mostly thermal (ecofact); split bipolar nodule (artifact); bipolar flake (artifact); cortextual flaking debris (artifact); amorphous cone/nodule (artifact); or a tool element (artifact). If the lithic was a tool, the tool type and comments about it were also recorded. Size grade served as the next partitioning of the stones, each class separated by 0.25 inch grid cells. The type of material used – fine or coarse – was recorded. Fine raw materials included the naturally occurring chert from the area; coarse materials included basalt, sandstone, and silcrete. The mass and count were recorded for each of these groupings.

Of 338 lithics and ecofacts, nearly half were natural cobbles (N=12) and shatter (N=121). Two hundred and five lithics were found in the Mmadipudi Hill unit, or 34.17 per m^3. The lithics from the test unit were primarily flaking debris, although core, flakes, and tool elements were found. Debris included both coarse- and fine-grained materials. Core nodules and flaking debris involved the largest-sized lithics, as well as the widest range of material sizes. Tool elements were made exclusively of fine material, often from the naturally occurring chert of the area. These tools ranged from 0.25-1 inch in diameter (Figure 9.3). Among the tools were a bipolar edge scraper and a wedge, both of which underwent use-wear analysis (see below).

At Khubu la Dintša, lithics and ecofacts were also frequently found. Three hundred twenty-four lithics and ecofacts were excavated from the test units and excavation units at the site (Table 11.1 and Figures 11.4 and 11.5). As at Mmadipudi Hill, many were natural cobbles (N=20) or thermal shatter (N=154). One hundred thirty-six lithics were found at Khubu la Dintša in the 25.3m^3 of cultural material excavated, or 5.38 lithics per m^3. This concentration is far less than was discovered at Mmadipudi Hill, at a ratio of 1:6.35. The lithics were primarily flaking debris equally divided between cortextual and non-cortextual elements (respectively, N=60 and N=55). Flaking debris accounts for 85% of the lithic sample at the site, suggesting that lithics were produced locally at the site. Eight of these were formal tools, located primarily in housing areas: four in Unit 7, three in Unit 6 and one in Unit 4. Five that may have been formal tools or at least utilized flakes were also found in Unit 7. Formal tools identified included projectile points (one broken, proximal end remaining, the other complete and unifacial), a scraper, a long, thin crescent blade, and utilized flakes. All the tools were in 0.5-1 inch in size grade, and all of fine-grained material. Their mass ranged from 1.1-9.3g, with a mean of 4.24g.

USE-WEAR ANALYSIS

Fifteen lithics from Mmadipudi Hill and seven from Khubu la Dintša were selected for use-wear analysis, conducted by Dr. Marvin Kay, Department of Anthropology, University of Arkansas-Fayetteville. Dr. Kay also provided the following methodology for cataloguing as well as the final interpretations of the use-wear results. Recorded information for these lithics included the type of object, weight (in grams), length, width, and thickness (in millimeters), and the edge angle (in degrees). Additional observations were made about the completeness of the lithic: 1) whether it was symmetrical; 2) if there was cortex and its location; 3) the location of visible edge damage; 4) if microscopic inspection took place, how the object was reoriented or rotated during analysis; and 5) the extent of the microscopic examination. Types of objects represented were unifacial and bifacial flakes and prismatic blades. For the Mmadipudi Hill lithics collection, lithics were chosen from a variety of levels, from Levels 1 (N=2) to 15 (N=5), to provide a broad look at what tools may have been used throughout the occupation. Two artifacts yielded positive results for use-wear and were, from a functional sense, classified as tools. Three were determined to be debitage, and three more were inconclusive due to the degree of tramping damage. For the Khubu la Dintša collection, the high concentration of lithics in Unit 6 warranted a concentrated study of artifacts from that unit. Five of the lithics came from Unit 6. A bifacial point from Unit 7 and one from Unit 4 were also chosen. Three Khubu la Dintša lithics tested positive for use-wear and three were debitage.

Mmadipudi Hill artifact 7-2 displayed extensive wear and cleaning strokes typical of hide scraping, as indicated by striae running perpendicular (scraping) and parallel (cleaning) to the utilized edge (Figure 11.6). Random striae on the ventral face towards the proximal end suggests a possibility of hafting, but due to its small size and length and diameter, hand-holding would have been the likely choice. Mmadipudi Hill artifact 1-1, although inconclusive in the final use-wear assessment, also provided insight into the manufacture and potential use of lithics at Mmadipudi Hill (Figure 11.7). Its naturally backed cortex would have provided easy protection if hand-held. The opposite side was dressed and has a rounded, deliberately ground edge. Its tip was broken, which may have occurred in use. Alternatively, it may have broken during the final stage of its manufacture, and it was discarded when it broke.

Khubu la Dintša artifact 90-1 was the proximal end of a unifacial flake that had been snapped off (Figure 11.8). Its width – 19.60mm – and thickness – 5.72mm – provide a general idea of its original size. Edge and invasive use-wear damage due to herbaceous plant processing suggests that it was a sickle blade or insert. Khubu la Dintša artifact 125-1 was a complete bifacial flake with a weight of 3.3g (Figure 11.9) It was triangular in shape, with a length of 24.49mm, width of 14.8mm, and thickness of 5.63mm. Hafted, its use as a projectile point was evident in an impact fracture and associated striae. Khubu la Dintša artifact 145-1 was a whole unifacial flake similar to 125-1 in its specs: 3.7g mass, and roughly triangular at 22.38mm length, 14.40mm width, and 4.42mm thickness (not pictured). A broad and invasive contact zone had major abrasion and U- and V-shaped striae showing retouch. Whether it was used was inconclusive. If nothing else, it may have been a novice flintknapper's first attempt at making such a tool.

IMPLICATIONS

Local production of lithics, by extension, implies that local people had knowledge about how to manufacture these tools. Lithic tools were found primarily in household areas at Khubu la Dintša either because they were associated with daily household activities or because of their perceived value. At Mmadipudi Hill, the relationship between household activities and lithic use remains unknown. However, it is clear at both Mmadipudi Hill and Khubu la Dintša that lithics were produced and valued. Projectile points, scrapers, wedges, and blades found at these sites were similar to lithics found at Bosutswe. Some of these had use-wear and retouch indicative of tool use. The high concentration of lithics at Mmadipudi Hill – more than six times that of Khubu la Dintša – demonstrates contrast within the Bosutswe region. Mmadipudi Hill's primary function may have been to produce lithics for trade. Alternatively, lithics at Mmadipudi Hill may have related to Denbow's earlier (1999) hypothesis about site hierarchy. As Khubu la Dintša and Bosutswe were higher status sites, they may have had more access to metal tools than Mmadipudi Hill. Or, perhaps the differing concentrations in lithics were indicative of a general trend in the Bosutswe region. As the region became wealthier due to participation in long-distance trade, perhaps there was increased access and production of metal tools. Trade in lithics may also have decreased as trade routes shifted, or new products became in demand from the Bosutswe region. Whatever scenario holds true, it remains important to emphasize that stone tools were not abandoned at Mmadipudi Hill or at Khubu la Dintša. Lithics played a function in Iron Age societies. Sometimes, stone tools were chosen as the simplest, easiest, or most accessible materials around for the job.

Chapter Twelve: Conclusion

Long-distance trade associated with the African Iron Age created an era of economic opportunity that involved the mobilization of peoples, the aggregation of groups, increasing reliance on domesticates, and the rise of large polities. The southern African Iron Age was a period known for technological innovations in mining, metallurgy, and stone architecture; craft specialization in ceramics and beadwork; and the exploitation of resources such as animal skins, ivory, rhino horns, salt, specular hematite, copper, and gold. The restructuring of the regional political economy significantly impacted how communities interacted with one another as well as with themselves. Complete revisions of social identity, status, and political structure ensued, and in some areas, hierarchy became not only pronounced but imbedded in social structures. At centers such as Mapungubwe and Great Zimbabwe, class divisions were prominent, with elites physically separating themselves from commoners. At Bosutswe, class developed as a whole new set of identity markers that included architecture, jewelry, and ceramics. Although status continued to be defined in cattle, exotic trade items expanded the concept of prestige items. Glass beads from the Middle East and South Asia indicated personal wealth and could be traded for cattle.

As Bosutswe became increasingly involved in the long-distance trade of Indian Ocean goods, satellite communities such as Khubu la Dintša and Mmadipudi Hill clustered around it in order to take advantage of new economic opportunities that Bosutswe's wealth and power attracted. These sites may have provided the polity with sorghum and millet as well as cattle, goats, and sheep. Access to grazing grounds, farmlands, and prestige goods would have involved negotiations with these communities.

Discussion of these hinterland groups is crucial to understanding both the local economy as well as how these complex societies flourished and functioned. Moving between multiple scales emphasizes the interconnectivity of players big and small. As demonstrated with the case of Khubu la Dintša, these small sites may have a big impact on the trajectory of the success of these larger polities.

Increased involvement in the Indian Ocean network correlated to a number of social changes in the Bosutswe region, including the emergence of social stratification in the 13^{th} century Early Lose period (Denbow and Miller 2007, Denbow et al. 2008). The impetus for the emergence of inequality in southern Africa has been hotly debated. Explanations range from climatic drought; long-distance trade; strategies to combat the environmental degradation; and political-religious power restructuring and changing "worldviews" about individuals, rainmaking chiefs, and hereditary leadership (Calabrese 2005; Denbow and Miller 2007; Denbow et al. 2008; Huffman 1986, 2007; J. Smith 2005; Chapters 2 and 3). The aggregation and collapse of agropastoral settlements and inequality occurred in a context of fluctuations in climate, and calls for further consideration of local environmental, economic, and social parameters (J. Smith 2005).

The Bosutswe region provided an interesting case study due to the nature of its prestige goods economy. At Bosutswe, the wealth gained from this trade was translated into cattle, and the additional strain on the local grazing areas over its long occupation resulted in a shift in herding strategies. Cattle were moved to dispersed grazing hubs, and some of the surrounding communities may have gained socially and politically as well as economically from this exchange. The local community may have been involved in a co-interdependent relationship with the polity, which in turn was dependent in some ways on long-distance trade. To understand the rise of Bosutswe, the local economy needed to be considered in tandem with broader regional changes.

Geophysical survey and archaeological excavations at two of these hinterland sites, Mmadipudi Hill and Khubu la Dintša, provided a first look at the local economy in the Bosutswe region (Chapters 6-11). These surrounding settlements took advantage of the economic opportunities that Bosutswe's participation and growing importance in the regional long-distance trade provided. Khubu la Dintša may have served as a grazing hub for the expansion of Bosutswe's herds, perhaps watched over by a few elite households' ties to Bosutswe through kinship relations. Alternatively, it may have served as a place of shelter and protection during a period of violent regional instability. As data from the sites of Khubu la Dintša and Mmadipudi Hill indicate, the local landscape had much to contribute towards how complex societies in southern Africa functioned both on local and regional levels.

The occupation of Mmadipudi Hill occurred early in the Bosutswe sequence during the Taukome and Toutswe periods (~550-1200 AD). A pilot geophysical survey using magnetic susceptibility was able to identify subterranean features of the site, including the main kraal, household clusters, individual houses, and, perhaps, thorn-bush fencing around the compounds. The imagery from the geophysical survey indicates that Mmadipudi Hill was a small cattle post that followed the Central Cattle Pattern type of settlement organization. Archaeological test excavation that accompanied the survey confirmed the imagery and helped establish the cultural chronology and general activities at the site. The occurrence of lithics at the site suggests that the occupants of Mmadipudi Hill made and used stone tools. Further research may better define the function and status of Mmadipudi Hill, as well as provide clues about its abandonment.

Khubu la Dintša provided a different perspective on local power dynamics. Khubu la Dintša was occupied during the Early and Middle Lose periods, during the era when Mapungubwe and then Great Zimbabwe hegemony was extended across the wider reigon. Khubu la Dintša was a hinterland site yet had prestige goods such as Lose ceramics, cowry shells, and glass and metal beads. At Bosutswe, the Early and Middle Lose periods were a time of distinct division between elite and non-elite, most notably through the use of distinctive Lose ceramics and specialized housing styles. A house floor discovered at Khubu la Dintša used the same red gravel floor as Lose houses at Bosutswe. Both Lose elite ceramics and Toutswe ceramics were found at the site, although it remains to be determined if these were part of the same occupation. The high concentration of wealth and symbolic Lose connections at this hinterland site relates strongly to shifting regional dynamics and to a changing political economy in the Bosutswe region. The connections between the Lose elite and the occupants of Khubu la Dintša must have been significant enough to warrant social and political relationships and alliances that allowed access to these status goods.

One scenario involved inclusionary network strategies that included a change in herd management strategy by Bosutswe. As long-distance trade increased, cattle herds also increased, and Bosutswe began grazing herds at dispersed hubs to accommodate their size and mitigate environmental degradation. This may have provided an opportunity for Khubu la Dintša to gain wealth. As social ties were necessary to secure these relationships, inclusion into the Lose identity would have constrained the degree to which inequality was able to develop in the hinterland. Political protection of these assets was enacted through the construction of stone walls. Khubu la Dintša would have been an essential asset to the maintenance of the local economy, one worth protecting in a time of regional turmoil. Yet, Khubu la Dintša would have been tied in turn to Bosutswe, whose wealth and social and ritual prominence in the landscape both protected and provided these opportunities. Dependency may not have necessarily meant equitable relationships; hierarchy may have existed between these sites.

The change in herding strategies, from centralized on the site to dispersed, offsite herd management, provided an excellent example of the growing dependency of the center on hinterland settlements. The lending of cattle to smaller sites, often solidified through marriage alliances, was one distinct way that Bosutswe could have interacted with and increasingly relied on its hinterland sites. That necessity stemmed from limited environmental resources, increasing wealth, and increased status goods. The hinterland would have become dependent on those services and opportunities it offered to the polity, strengthening a system of mutual economic interdependence. The mutual needs of these sites and the types of items considered valuable would have worked in tandem to develop and constrain inequality in the Bosutswe region. The complex set of relationships between the exclusivity of the Lose identity and inclusion of hinterland people into that faction may provide a dynamic look at the social, political, and economic dimensions of social complexity on the Kalahari frontier.

An alternative scenario suggested that Khubu la Dintša was linked to the burning episode at Bosutswe. The Lose elite emerged in the Early Lose period. The elite controlled the influx of long-distance trade goods and possibly certain prestige goods such as iron tools as well as smelting and smithing. The control of status goods was matched by social differentiation, as attachments to its extra-local trade partners that included Mapungubwe and Great Zimbabwe was evident though the Lose ceramics assemblage. After Mapungubwe collapsed, there may have been a power shift in the southern African interior. The Lose elite may have been vulnerable to Great Zimbabwe's new dominance of the regional trade, as it had so closely aligned itself economically and culturally with Mapungubwe. The power shift may have also been an opportunity seized by the Lose elite to expand its control of the trade routes near the Kalahari. This may explain why the site of Lose, 100km to the south of Bosutswe, contained Lose ceramics but very few status goods, while Zimbabwe-walled sites were located to the north and east of Bosutswe (Denbow in conversation 2013). Regional instability and warfare due to Bosutswe's earlier alliances with Mapungubwe or because of an attempted power grab by the Lose and others may have led to the burning episode at Bosutswe. Consequently, the elite population at Bosutswe may have dispersed, with a small population of Lose elites moving to more defensible positions such as the hilltop of Khubu la Dintša for a brief period until regional relationships were negotiated or resolved. That period was short, hence the tight radiocarbon dates and shallow deposits at the site of Khubu la Dintša. The network strategies on which the Lose elite based their status may have left them in a precarious position in relation to regional dynamics. The Lose elite may have become dependent on a prestige goods economy and long distance trade, and put a primacy on safety and compromise. The gradual marginalization of Bosutswe in regional trade would have led to the decline and eventual abandonment of the Bosutswe region.

The focus of this dissertation on local relationships linked actors from both sides of the local dialectic – those at Bosutswe and those who were not, participatory even if subordinate. Identity was expressed through materials such as ostrich eggshell, metal, and glass beads and through food and its presentation in ceramic vessels. Power was exercised in terms of access to cattle, through marking the hilltop site of Bosutswe as part of everyone’s visual landscape and through relationships between people. These social and political relationships were crucial, as in them lay the ability to "authorize, allow, afford, encourage, permit, suggest, influence, block, render possible, forbid and so on" (Latour 2005:72). Social landscapes have been described as "interacting web[s] of settlement, population, technology, resources, and the environment" (Mothulatshipi 2008:21; cf. Connah 2001, Robinson 1996). The subject of individual and group differentiation, its origin, development, rationalization, and institutionalization forms a core of questions about the study of human societies. The economics of trade and sustainability, environmental conditions, political concerns, religious institutions, and social constraints are among the many factors that shape the trajectory of complex societies. Local dialectics and regional dynamics in Iron Age Botswana offer one of many complex social landscapes to explore.

Chapter Thirteen: Limitations and Future Research

Archaeological research is limited by three major factors – time, labor, and money. A dissertation is no exception. More excavations, more analysis, inclusion of more ethnographies, and comparison of more sites in Africa and beyond are just the beginning of an exhausting list of critique and potential. Some of the limitations of this research were unavoidable, such as the anthropogenic damage done to the site of Khubu la Dintša. Limited time and funding prevented faunal analysis at this time. This, combined with a subsequent stable isotopic analysis of the animal teeth, can provide additional data to advance one of the scenarios proposed in this dissertation. Future excavations at Khubu la Dintša and Mmadipudi Hill can address questions about household activities and variability between these households, as well as the degree to which inequality exists within hinterland sites. The concept of landscape in the Bosutswe region can be expanded to include ground sites, another important component of the local and regional economy. Ground sites may also provide insight to relationships between sedentary communities and hunter-gatherers, a subject of continuing debate in southern African anthropology. Each of these limitations and the potential for future research is described below in brief.

EXCAVATIONS AND FAUNAL ANALYSIS

Good archaeological analysis is founded in empiricism. More data can better address questions at hand. At Khubu la Dintša, for example, it was difficult to address questions of intrasite hierarchy. Only one house and what is assumed a household area was discovered. Each 4x4m unit provided a small window into the activities occurring in each of those areas, and quantitative comparison was not possible. Was the house in Unit

7 typical for all houses at Khubu la Dintša? Did the nature of household activities change during the occupation at Khubu la Dintša? Was individual wealth apparent at the site? How do these compare to experiences at other hinterland sites? Further expansion of house units such as Units 6 and 7 are one way to start addressing these questions. Additional excavation units, such as the expansion of TU8, are another. TU8 contained glass beads, an iron blade, and a grain bin foundation, and was likely another household area. If this is true, an excavation unit at TU8 could make for a useful comparison to Units 6 and 7. An expansion of Unit 5 would not only provide a better representation of the fauna at the site, but would also clarify questions about the duration of the kraal's use. Obtaining more dates and potentially more decorated ceramics will address whether Toutswe is stratified under the Lose components as well as whether or not the kraal was used throughout the Lose occupation.

Survey and excavation were even more limited at Mmadipudi Hill. The geophysical survey only covered a small area of the hilltop occupation. Complete survey coverage can map out the full extent of the site, and provide additional areas for excavation. As the purpose of the excavation at Mmadipudi Hill was to test the results of the geophysical survey, very little excavation took place. A 4x1m unit provided the briefest glimpse of daily activities and site dynamics. Expanding the size and number of units at Mmadipudi Hill can address a number of engaging questions: 1) identifying differences between the Taukome and Toutswe occupations; 2) comparing these subsequent occupations to Bosutswe to see if Mmadipudi Hill's relationship with Bosutswe changed over time; and 3) understanding why Mmadipudi Hill was abandoned. Indeed, simple comparison between Mmadipudi Hill and Khubu la Dintša suggests that local dynamics shifted drastically during Bosutswe's occupation. If Mmadipudi was abandoned immediately before or as the Early Lose period began, it may indicate a significant shift in relationships between the polity center and the hinterland. Comparison of households between Bosutswe and Mmadipudi Hill can also indicate the degree to which inequality preceded the emergence of the Lose identity. Comparison of the faunal assemblages between these sites would play a similar role. It may be that the best opportunities for future research stem from this pilot study: specifically, from the lithics collection and geophysical survey results.

Iron Age studies often overlook the role lithics played in daily activities; Mmadipudi Hill appears to be a prime location for such research. The high concentration of lithics at Mmadipudi Hill suggests that it may be a production site for stone tools. Whether these lithics were being produced for trade or for use at local sites will require a more complete collection and analysis of lithics. Lithics may be more frequent at Mmadipudi Hill than at Bosutswe. Whether the lithics at Mmadipudi Hill mean it was a production site (Weedman 1992) or a lower-tiered site (Denbow 1999) may be addressed through further excavation and analysis.

Analysis of the fauna from Khubu la Dintša may provide key answers to the site's function vis-à-vis Bosutswe. In particular, the fauna may help determine whether Khubu la Dintša was a dispersed grazing hub for cattle, as suggested by Denbow (Denbow et al. 2008) and this dissertation. These differences can be tested through C, N, and Sr stable isotope analyses of human and animal remains. Stable isotope analyses suggest preferential C_4 grazing of cattle at Bosutswe, indicating that the grazing grounds were not degraded (Denbow et al. 2008). If Khubu la Dintša has similar signatures in its cattle, it would support the idea that Khubu la Dintša was a dispersed hub. Additionally, more excavation in the kraal area at Khubu la Dintša can help expand the faunal database and dating. In this dissertation, Unit 5 was excavated as a 2x2m. The expansion of Unit 5 to a 4x4m unit or the addition of a few other units in the kraal would provide a more complete faunal assemblage. Type and age of faunal assemblages from the midden and household areas may indicate diet and differences in access to meat. As the Lose elite diet at Bosutswe was almost exclusively cattle (Atwood 2005), similarly high cattle and prime-age stock consumption at Khubu la Dintša may indicate equitable status. Diet at Khubu la Dintša may also differ in terms of domesticated versus non-domesticated plant species. Consumption of wild and domesticated plants and animals can been seen in stable isotopic analysis of sedentary and foraging groups (Mosothwane 2010). Intra-site hierarchy may be present at Khubu la Dintša if certain households consume more domesticated plants than others.

EXPANDING THE CONCEPT OF THE BOSUTSWE REGION THROUGH GROUND SITES

Almost entirely ignored in earlier archaeological research of Iron Age sites is the contribution of ground sites. The Iron Age landscape extended beyond permanent hilltop settlements and included smaller, ephemeral sites on the ground. These ground sites could have included temporary camps for traders and hunter-gatherers and smaller homesteads inhabited for a few years or a few generations. Hunting-gathering communities and smaller farming and herding settlements were part of the diverse types of settlements on the landscape, and may very well have been how the majority of the population lived (Mothulatshipi 2008). Ground sites, in their impermanence of location yet permanent featuring on the landscape, represent the flexibility and fluidity needed to survive in marginal environments. The relationships between trade centers such as Bosutswe and ground sites was likely strong, as hilltop sites served as a magnet of opportunities for peoples moving across the landscape.

It may be possible to develop a "site signature" of ground sites to predict their location. This could be accomplished by building a predictive model through the use of multi-spectral satellite imagery and a geographic information system (GIS). The variables involved in the model may include proximity to water, proximity to hilltop settlements, elevation and slope preferences, soil types, and remnants of the original sites, such as kraals (see Denbow 1983 and 1984 for some indications). From initial observations in 2009 and 2010, ground sites are less than a hectare in size (Figure 13.1). Kraal areas appear to be slightly raised (approximately 0.5 to 1 meter for the rounded area, visible from the ground level), with lighter-colored soil than the surrounding areas (Figure 13.2). These ground sites attract a high degree of rodent disturbance – holes and burrows created by spring hares and antbears (African aardvarks) (Figure 13.3). These holes, ranging from approximately 10-15 cm in diameter (for the spring hares) and 1-1.5 meters (for antbears) occur more frequently in areas with ground sites. Although site disturbance upsets intact cultural layers, it brings many artifacts such as ceramic sherds and faunal remains to the surface. Whether these "signatures" or other vegetation patterns, like the hilltops, can help predict ground sites could be the focus of this analysis. This may be one way to better balance our understanding of the Iron Age landscape.

Future research at smaller hinterland sites like Khubu la Dintša and Mmadipudi Hill and the exploration of ground sites are steps towards building a more holistic picture of the prehistoric landscape. One commonality these research objectives have is an attempt to identify variations of peoples and lifestyles that populated the landscape. The role of hunter-gatherers in the local and long-distance trade network would have related to the extraction of raw materials and commodities, in particular salt, exotic animal skins, labor, and specular hematite (Denbow 1986, 1990). Wilmsen added rhino horns, ostrich feathers, gum arabic, and aromatic woods to that list (Wilmsen 1989:74). In exchange for these goods, cattle and livestock and other material goods – pottery, iron and metal tools, metal jewelry, and ostrich eggshell beads – would have been exchanged (Denbow 1990).

These exchanges would not have ended in strict economic relationships. Exchanges and interactions meant changing political and social dynamics, such as changing long-distance trading routes, overhunting, attempted control of resources, influx of wealth, and growing inequality.

Recent archaeological studies have implied such relationships likely existed. A study of the prehistoric mining of specular hematite, or specularite, in the Tsodilo Hills in northern Botswana is one (Robbins et al. 1998). Specularite is a culturally significant and symbolic material. A shiny, silver powder, it was mixed with grease or fat and used for cosmetics, body and clothing paint for personal adornment, and sunscreen by both Bantu and San communities (Robbins et al. 1998:146). The demand for mining was great. Robbins et al. argued that hunter-foragers mined specularite in the Early Iron Age in the Tsodilo Hills and traded with iron-using communities. Two other sites in Tsodilo Hills add to this mixed landscape of hunter-gathers and Bantu communities (Denbow 1990, 1999:118-9). Divuyu had no evidence for interaction with local pastoral-foragers. Nqoma, 2km to the south, however, was a site for lithic manufacture as well as a metalworking site. Hunting was also important at Nqoma. Foragers may have not only been trading with but also have been living there (Mosothwane 2010).

CONTINUED DOCUMENTATION OF THE *PHEKOLO* CEREMONY AT KHUBU LA DINTŠA

The *phekolo* ceremony that was held at Khubu la Dintša between 1994 to the mid-2000s is mentioned repeatedly throughout this dissertation (Chapters 3, 6-8). This ceremony was first documented through interviews by Dr. James Denbow in 2002 and was subsequently partly published (Denbow and Mosothwane 2008, Denbow, Mosothwane, and Ndobochane 2009). The interviews in these articles describe the ongoing ceremony. However, nothing has been published, photos or otherwise, since the *phekolo* ceremony has been discontinued. Video footage of Denbow at the abandoned site in 2010, photos taken over the course of this dissertation fieldwork, and future interviews of the former church members can complete the story.

Beginning in the 1990s, Khubu la Dintša was used as an "ancestral church" called *Tumelo mo Badimong*, "Faith in Ancestral Spirits" (Figures 13.4 and 13.5). By 2002, Khubu la Dintša had become a site for yearly purification rituals, known as *phekolo*, headed by a spiritual leader named Motofela Molato every July. Phekolo churches have sprung up informally around Botswana, partially in response to the outbreak and rapid spread of HIV/AIDS. Notions of AIDS as a punishment given from the ancestors, as witchcraft, or even *boswagadi* (the end result of having sex with the spouse of a dead person before a purification ritual) existed as alternative explanations for the endemic (Gaie and Mmolai 2007). Churches like Molato's attempted to reconnect their members with their ancestors and sought a spiritual harmony with *botho*, or humanhood. At Khubu la Dintša, spiritual imbalance brought 150 congregants together every July, traveling from the town of Lethlakane, over 160 kilometers away, to this place. "The Hill where Lions were Chasing the Dogs" gathered a new association to its name as Molato saw lion paw-prints in some of the rocks at the site. Lions have strong religious and symbolic importance in Batswana society as they play part of a creation myth. Impressions in two rocks were thought of as lions' footprints from a time when the earth was still soft. Small altars were built around each. Whitewashed stones lined the hilltop path to the main ceremony area that included a dancing floor and cleansing basins located in a wooden structure that allowed purification for the church's followers (Figures 13.6 and 13.7).

Molato and his church backlashed against Western medicine and even archaeologists, believing them responsible for angering the ancestors and making people sick (with HIV/AIDS). The local nursing clinics were accused of infecting people with the AIDS virus. By 2002, the poking and prodding by archaeologists into ancestral resting places (i.e. archaeological sites) was cited as a major problem. Although *Tumelo mo Badimong*'s own modifications of the stone walls and grain bins and digging for white (kraal) deposits were ignored, these rumors brought forward by Molato created concern about archaeology in the local area. Denbow addressed these issues through negotiations with Molato as well as through presentations he gave to the local community in Mmashoro about the archaeologists' activities. By the time of this dissertation research, Molato and his church had abandoned the site for at least five years: the stone-lined path was kicked out of alignment by grazing cattle or scampering kudu, the wooden structure was collapsing and the basins had washed away; entranceways of mud and stone melted and slumped inwards on themselves – dirty, melted marshmallow-like piles of deflated daga retired from duty and washed by the seasonal rains (Figures 13.8-13.10).

In 2010, Brian Potter, an Austin filmmaker, took video footage of James Denbow revisiting the site. Although similar to the articles that Denbow has published, the footage offers a more complete retelling of the story, complete with visuals. This film footage could be made into a short documentary of the *phekolo* ceremony. The documentary could also incorporate oral interviews with members of the community that were part of the church or recall its activities. These can also include maps and photographs taken by this author. This documentary could then be donated to the National Museum of Botswana and the local museum in Serowe to preserve this cultural heritage.

This list is just the start of many avenues for potential research in the Bosutswe region and beyond. Caldwell once wrote, “Those who would study cultural change on the basis of events within a single society – living or dead – will see a very narrow aspect of the phenomena which interests them” (Caldwell 1964). Consideration and comparison of houses, sites, and regions in Africa and beyond are needed to address the development and trajectory of complex societies and inequality and how they impact us today.

Tables and Figures

Chapter 3

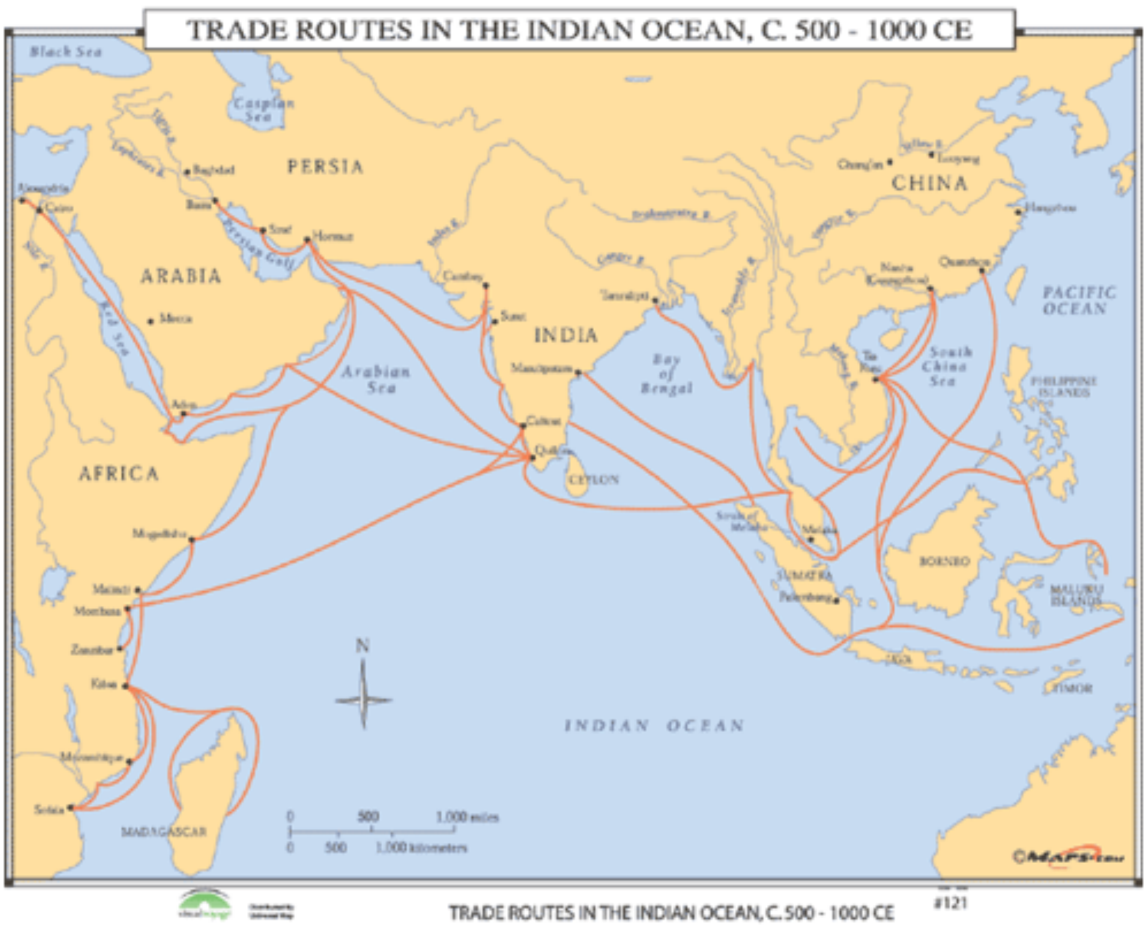


Figure 3.1: Map of Indian Ocean Trade Networks (Universal Map)

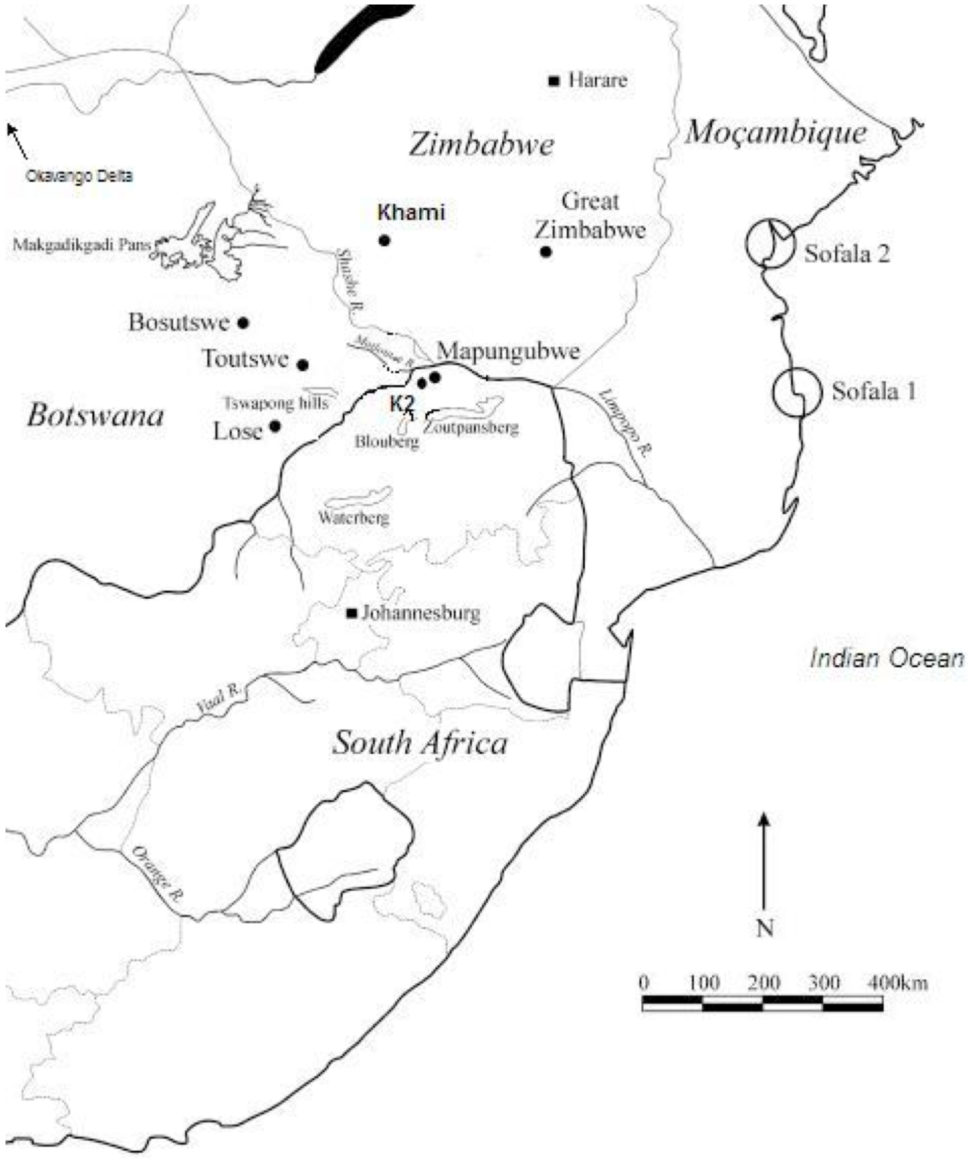


Figure 3.2: Map of Southern African Iron Age Polities. Adapted from Huffman 2009:38.

Figure 3.3: Mapungubwe. Photo from http://www.sanparks.org/

Figure 3.4: Great Zimbabwe

Chapter 4

Figure 4.1: View of Bosutswe Regional Landscape. Photo taken from Khubu la Dintša. Bosutswe is located on the left horizon, Mmadipudi Hill on the right.

Bosutswe Region

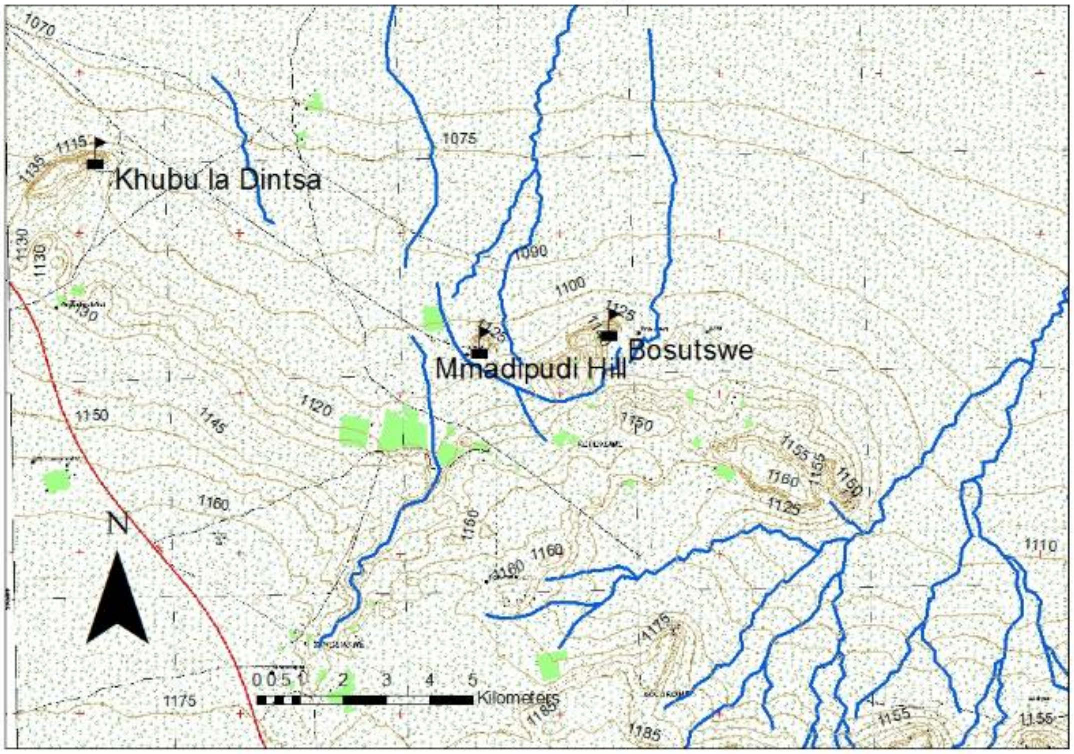


Figure 4.2: Map of the Bosutswe Region

Figure 4.3: Modern cattle post at the base of Mmadipudi Hill in the Bosutswe region. Note the vegetation change due to grazing herds of cattle, goats, and sheep.

Figure 4.4: Bosutswe, side view

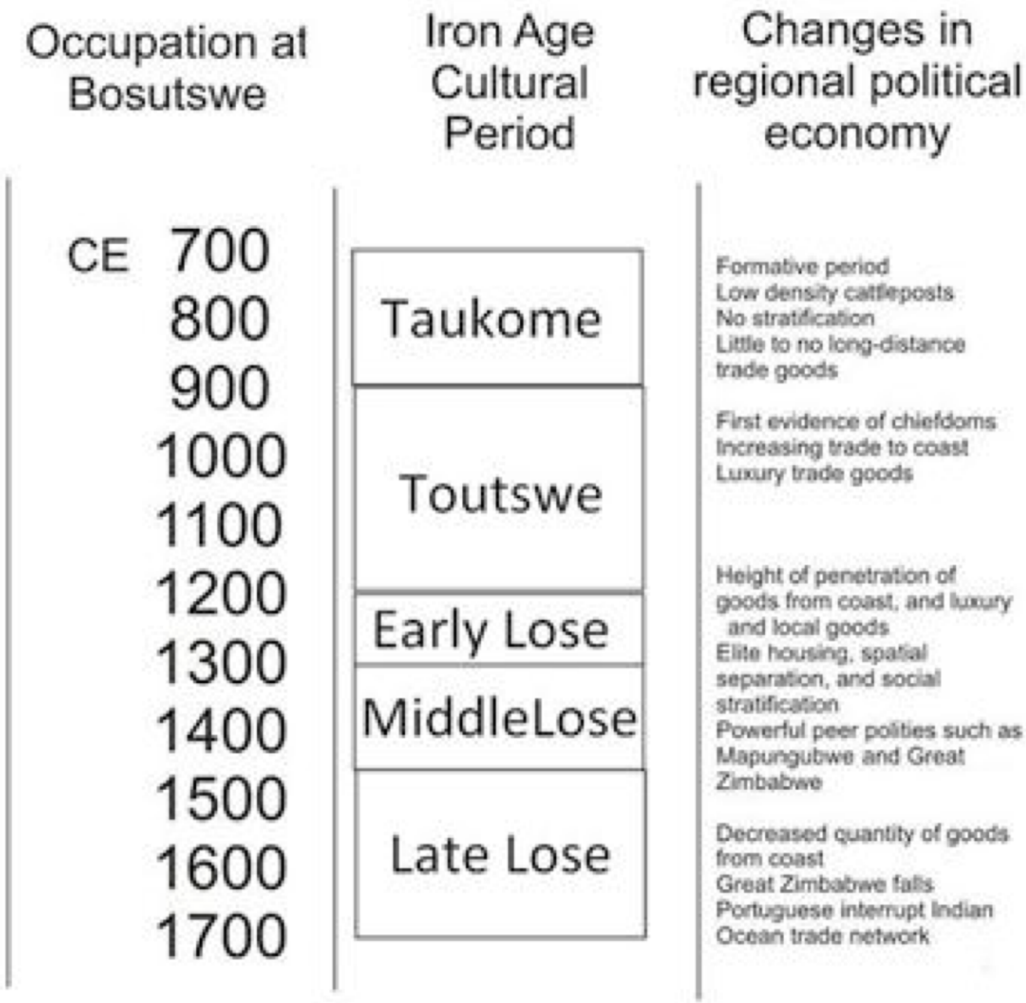


Figure 4.5: Bosutswe chronology

Figure 4.6: Stratigraphic view of part of the eastern wall in the Eastern Precinct. Note the Lose red gravel floors in the lower layers.

Figure 4.7: Iron and bronze bracelets found at Bosutswe in 2009. The iron bracelet is in the foreground, the bronze bracelet is behind it.

Figure 4.8: Khubu la Dintša, side view

Figure 4.9: Khubu la Dintša, top view

Figure 4.10: Mmadipudi Hill, top view. Photo taken looking eastwards from central kraal.

Chapter 5

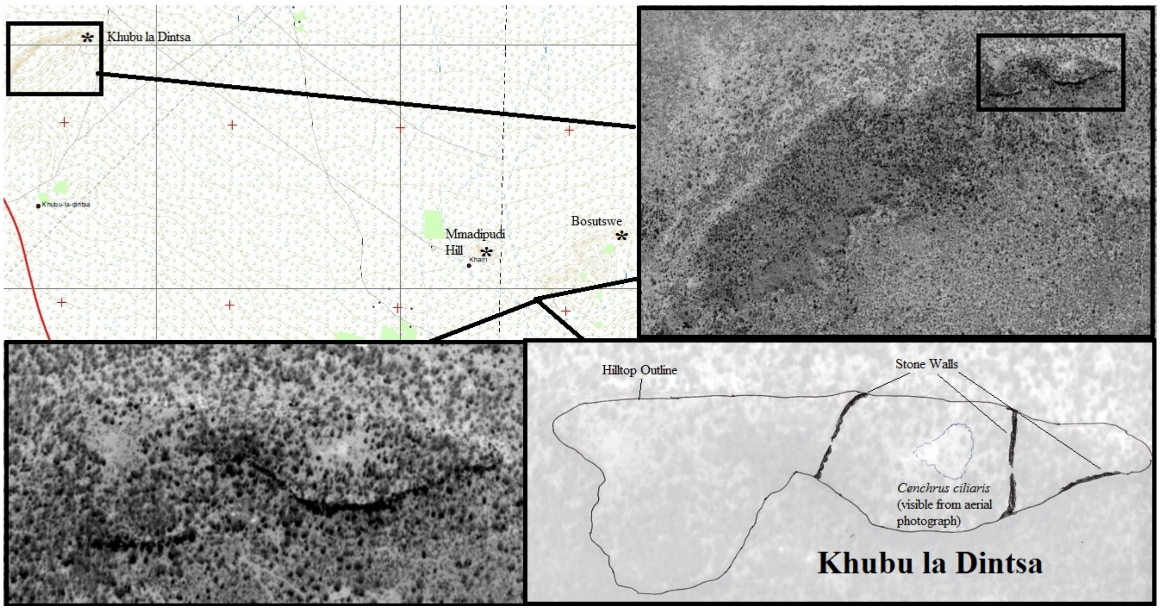


Figure 5.1: Location of the site of Khubu la Dintša in Bosutswe region

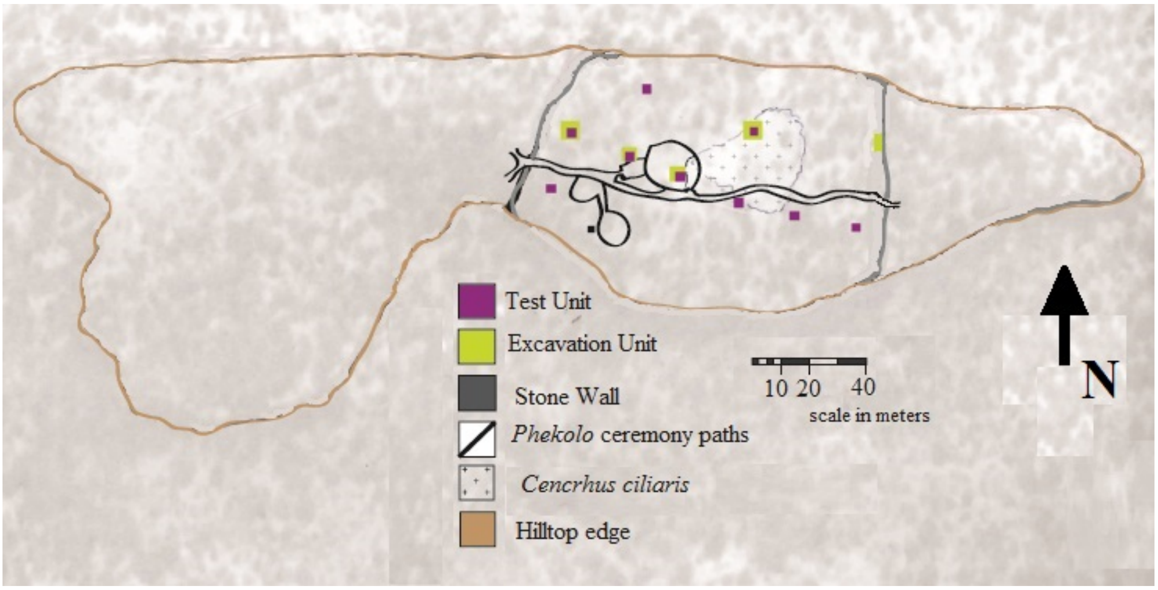


Figure 5.2: Map of Church remains, units, and features at Khubu la Dintša

Figure 5.3: Grain bin foundation found at Khubu la Dintša

Figure 5.4: Example of Iron Age kraal. Photo taken at Mmadipudi Hill, of the main kraal located there.

Figure 5.5: One of three stone walls at Khubu la Dintša (Eastern Wall)

Figure 5.6: Entrance pathways built for the *phekolo* ceremony. Note that the modern church path interrupts the Iron Age stone wall running horizontally through the photograph.

Figure 5.7: Patches of buffalo grass indicating Iron Age deposits underneath

Feature	Location (Cape Datum)	
Khubu Datum 2011	21°55'0.5" S	26°30'13.7" E
Backsight	21°55'0.8" S	26°30'13.4" E
Unit 4	21°55'0.6" S	26°30'14.4" E
Unit 2W2	21°55'0.1" S	26°30'17.0" E
Unit 6	21°55'0.3" S	26°30'13.0" E
Unit 7	21°55'0.1" S	26°30'15.1" E
Grain Bin 1	21°55'1.5" S	26°30'14.7" E
Grain Bin 2	21°54'59.4" S	26°30'14.3" E
Grain Bin 3	21°54'59.7" S	26°30'13.8" E
Grain Bin 4	21°54'59.9" S	26°30'14.1" E
Grain Bin 5	21°54'59.8" S	26°30'14.5" E
Grain Bin 6	21°54'59.9" S	26°30'14.8" E
Grindstone	21°55'0.6" S	26°30'19.7" E
Utilized Stone	21°55'0.8" S	26°30'15.0" E
Western Wall North Edge	21°54'59.1" S	26°30'13.5" E
Western Wall South Edge	21°55'1.9" S	26°30'12.2" E
Eastern Wall North Edge	21°54'59.7" S	26°30'16.9" E
Eastern Wall South Edge	21°55'0.7" S	26°30'17.0" E

Table 5.1: GPS locations of site features at Khubu la Dintša

Figure 5.8: Datum, located in the central part of the bottom of the photograph

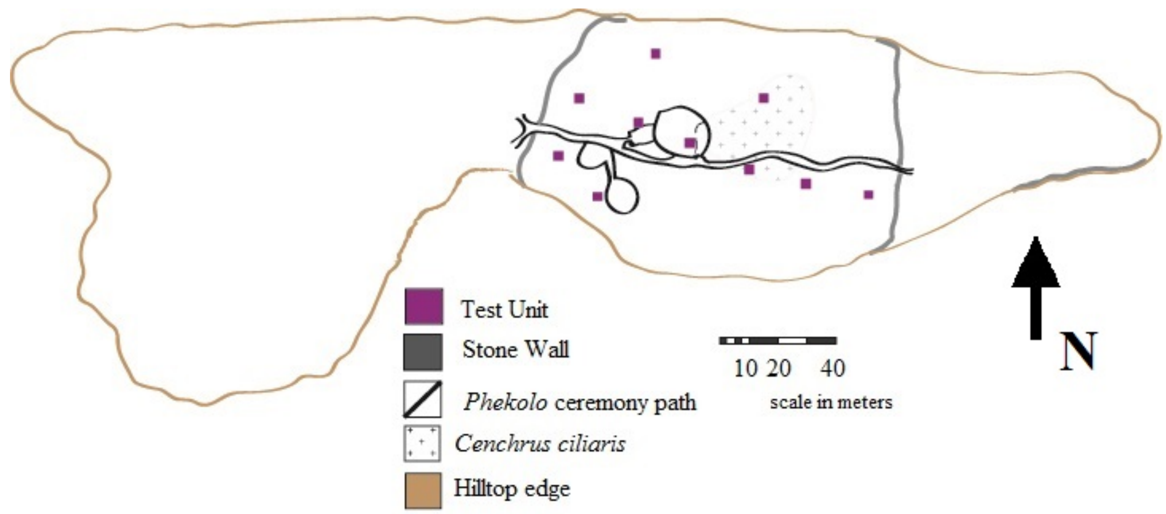


Figure 5.9: Map of test units at Khubu la Dintša

Figure 5.10: Base of Unit 4. Note the jagged bedrock and reddish soil.

Figure 5.11: Base of TU1. Very shallow deposit.

Figure 5.12: Animal jaw, possibly goat or sheep, from TU5 Level 3

Figure 5.13: Grain bin foundation in TU8, end of Level 1

Figure 5.14: Lose-style ceramic sherd found in TU8 Level 1

Figure 5.15: Iron Blade from TU8, Level 2

Figure 5.16: Grinding stone from TU6 Level 2

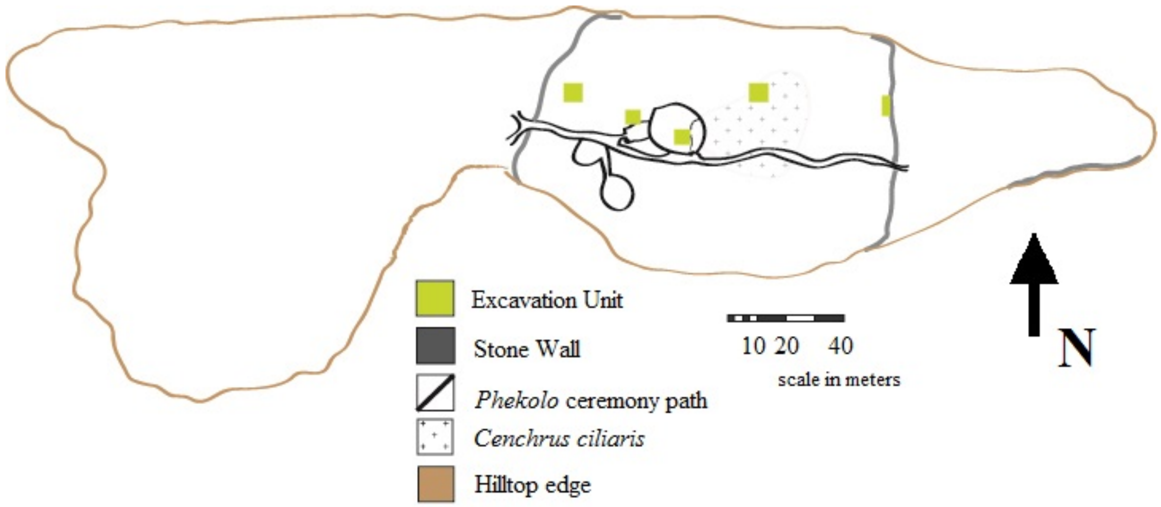


Figure 5.17: Map of excavation units at Khubu la Dintša

B	4B0	4B1	4B2*	4B3
A	4A0	4A1	4A2	4A3
Z	4Z0	4Z1	4Z2	4Z3
Y	4Y0	4Y1	4Y2	4Y3
	0	**1**	**2**	**3**

Unit 4

D	6D1	6D2	6D3	6D4
C	6C1	6C2	6C3	6C4
B	6B1	6B2*	6B3	6B4
A	6A1	6A2	6A3	6A4
	1	**2**	**3**	**4**

Unit 6

C	7C0	7C1	7C2*	7C3
B	7B0	7B1	7B2	7B3
A	7A0	7A1	7A2	7A3
Z	7Z0	7Z1	7Z2	7Z3
	0	**1**	**2**	**3**

B	5B1	5B2
A	5A1	5A2*
	1	**2**

Unit 5

Figure 5.18: Grid assignments by excavation unit

Chapter 6

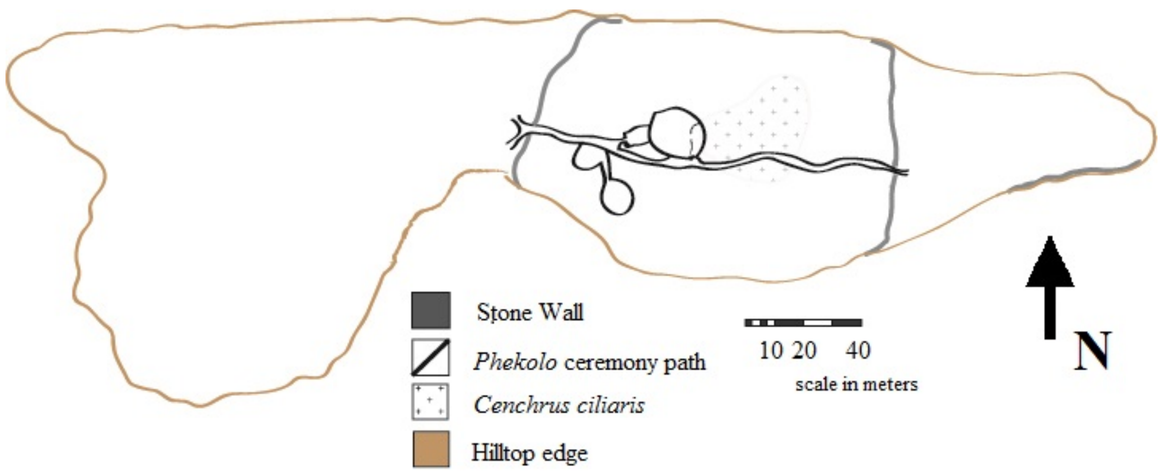


Figure 6.1: Sketch map of the stone walls

Figure 6.2: Photo of Western Wall, looking north

Figure 6.3: Photo of Eastern Wall, looking north, showing what may have been the original height of the stone wall. Mothusi Maeletsa, UB students for scale.

Figure 6.4: Eastern Wall, western side. Possible household partitions are visible in the foreground.

Figure 6.6: The wrapping around of Western Wall along the northern edge of Khubu la Dintša

Figure 6.6: Wrap-around of Western Wall at alternative angle, showing sharp relief of the surrounding hillside

Figure 6.7: View upwards of Eastern Wall. Brian Potter stands on the wall edge for scale.

Figure 6.8: Third Wall at Khubu la Dintša

Figure 6.9: Alternative view of Third Wall, showing length

Figure 6.10: Third wall, as seen from ground level

Figure 6.11: Unit 2W2 before excavation. Unit 2W2 ran two meters along the wall base, and extended one meter inwards towards the site.

Figure 6.12: Photo of Unit 2W2 during excavation. Note the wall of the unit follows the wall's profile.

Figure 6.13: Grinding stone from Unit 2W2 B1 Level 1

Figure 6.14: Iron spearpoint from Unit 2W2 A1 Level 1

Figure 6.15: Unit 4

Figure 6.16: Photo of Unit 4B0, end of Level 4. Dung layer present in wall

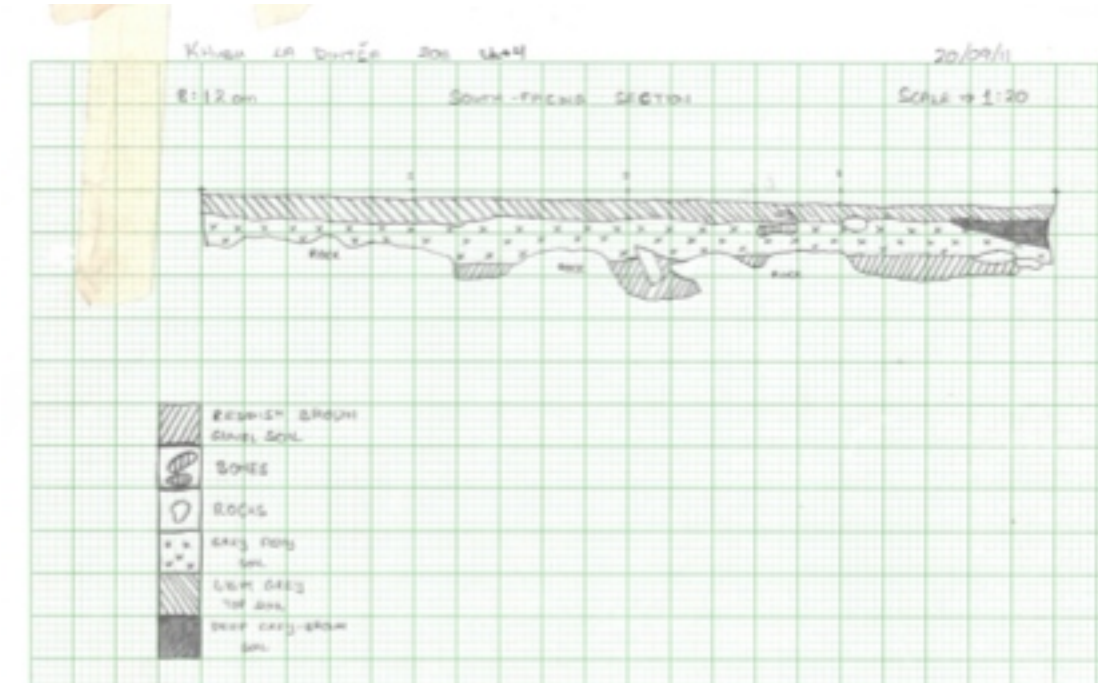


Figure 6.17: Profile sketch of Unit 4

Figure 6.18: Photo of Unit 6

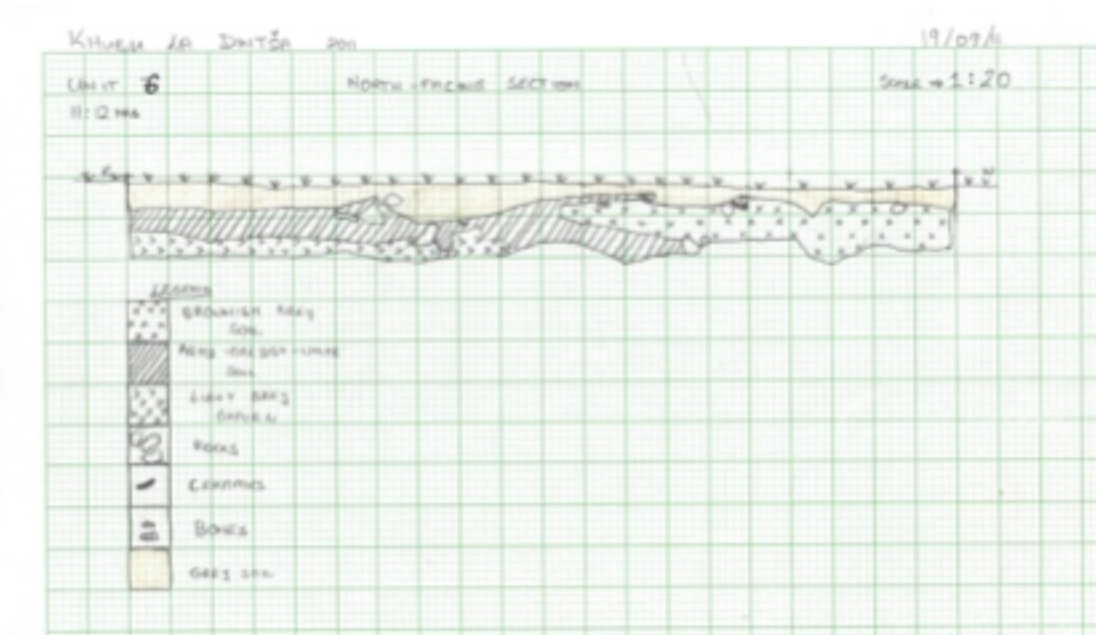


Figure 6.19: Profile sketch of Unit 6

Figure 6.20: Bowl awl found in Unit 6B4 Level 2

Figure 6.21: Bone whistle found in Unit 6A2 Level 1

Figure 6.22: Animal jaw in context, Unit 6D2 Level 2

Figure 6.23: Unit 7

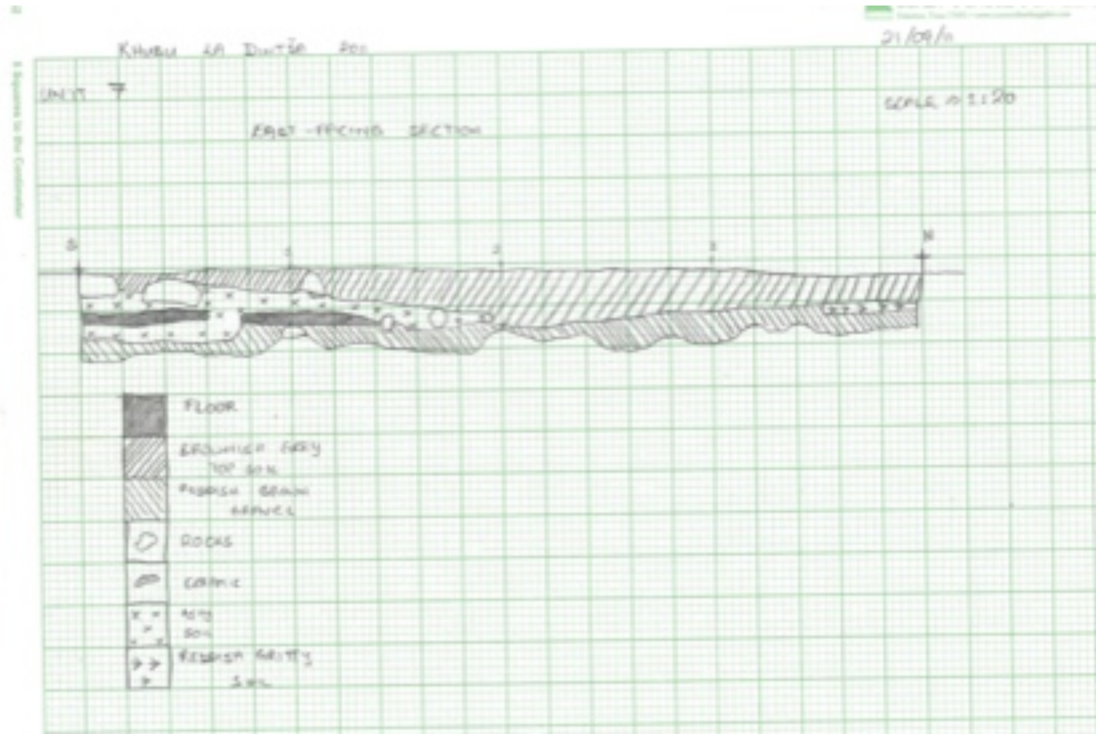


Figure 6.24: Profile sketch of Unit 7

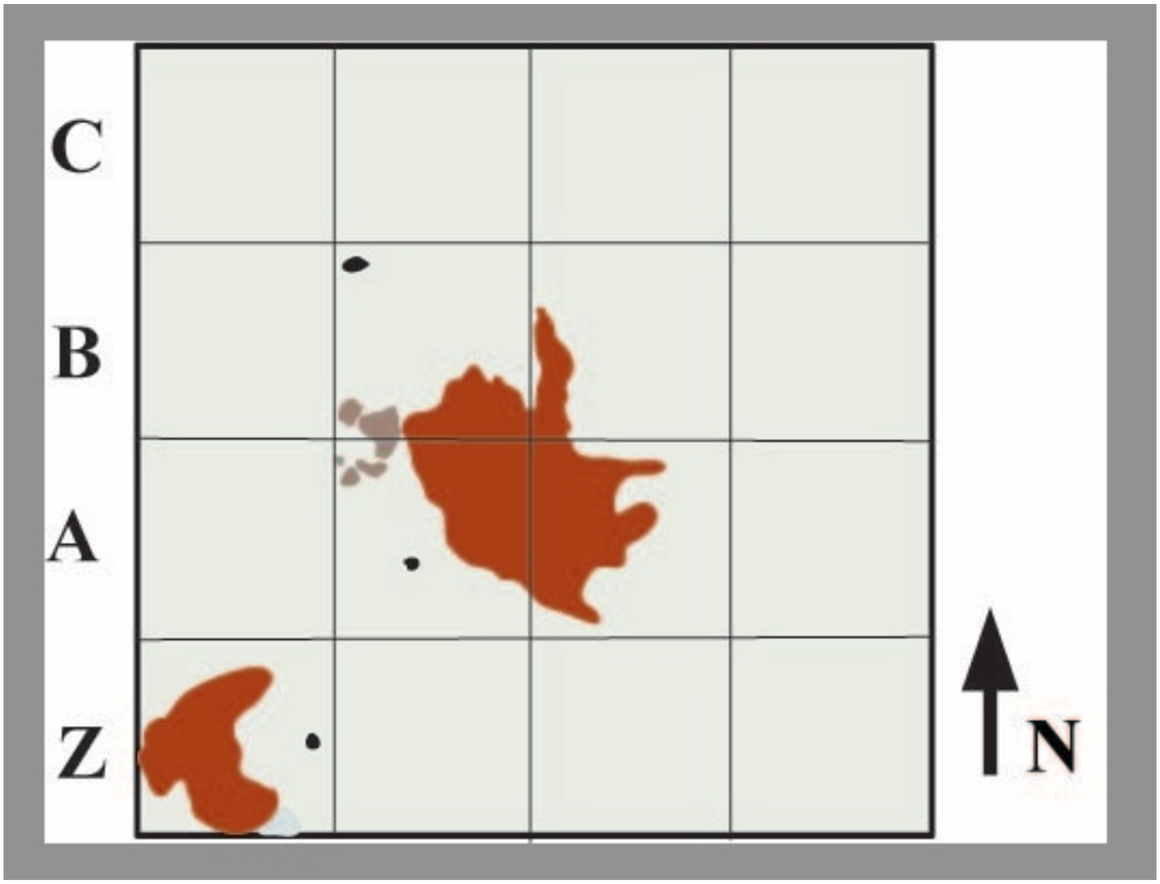


Figure 6.25: Sketch of house floor in Unit 7

Figure 6.26: Pots feature on top of house floor, Unit 7B1 Level 2

Figure 6.27: Red gravel floor associated with house in Unit 7

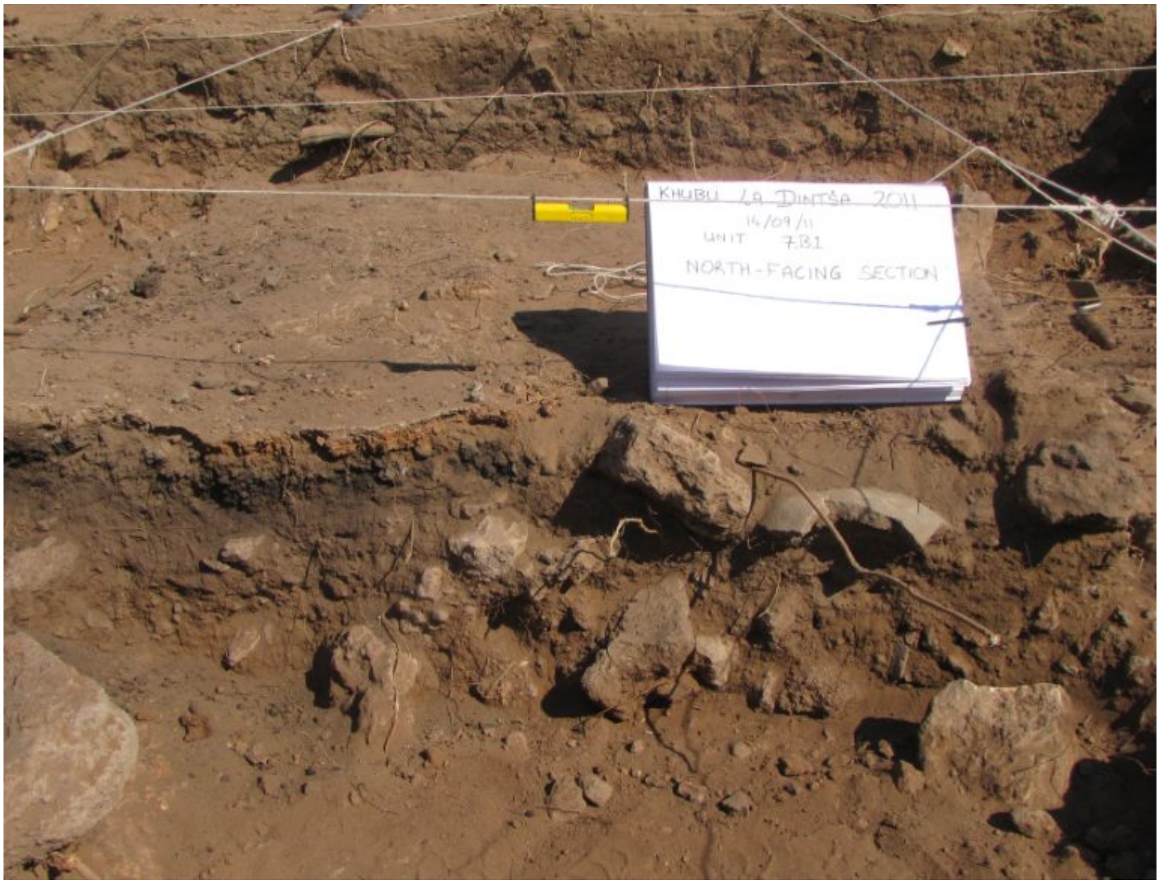


Figure 6.28: Burnt floor is evident in profile view of Unit 7B1

Figure 6.29: Animal jaw found in Unit 7A0 Level 4

Figure 6.30: Ceramic and bone feature in Unit 7Z3 Level 3

Figure 6.31: Iron hoe found in Unit 7Z3 Level 3

Figure 6.32: Unit 5

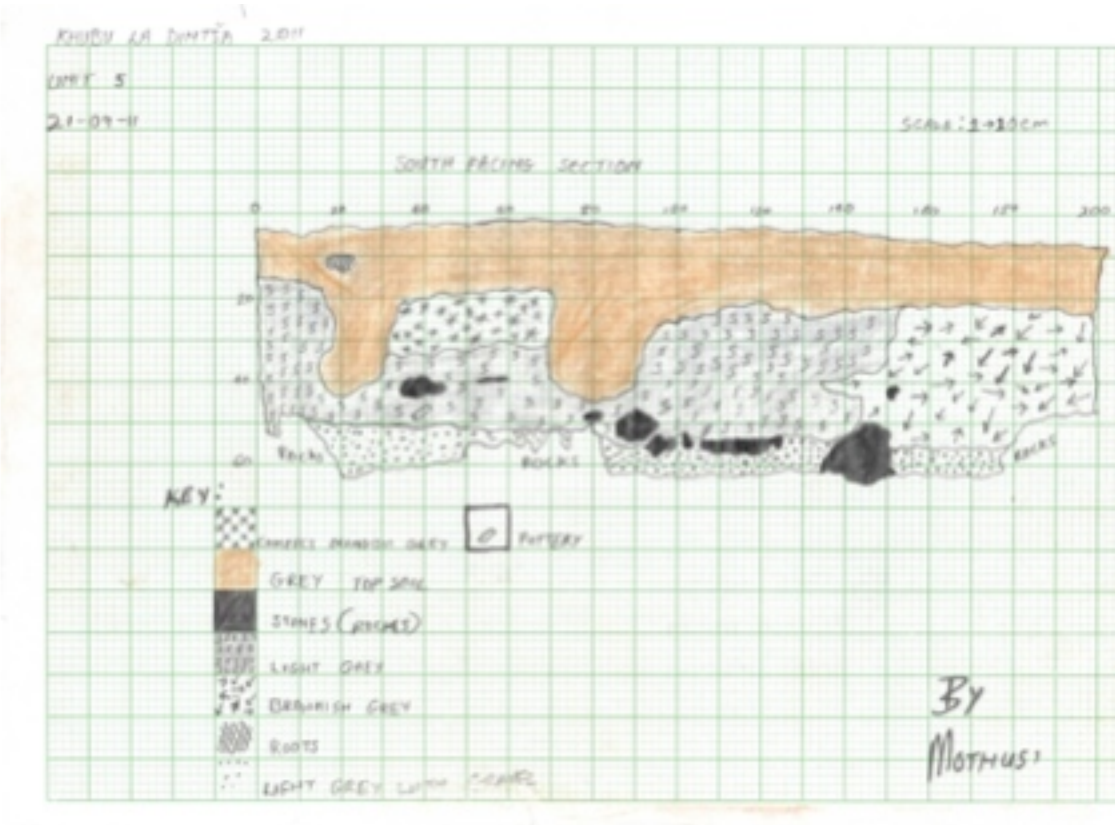


Figure 6.33: Profile sketch of Unit 5

Chapter 7

Figure 7.1: Zhizo/Taukome ceramics. From Huffman 2007:145.

Figure 7.2: Toutswe ceramics. From Huffman 2007:153.

Figure 7.3: Lose ceramics. Photo from Huffman 2007:291.

Figure 7.4: Photos of unusual rim sherds at Khubu la Dintša. From upper left, clockwise: 1) Unit 4A0 Level 1, 2) Unit 4Y2 Level 1 (same vessel as 5), 3) Unit 4Y2 Level 1, 4) Unit 7C1 Level 3, 5) Unit 4Y2 Level 1 (same vessel as 2).

Ceramic Category	Description of Decoration	Count
Toutswe	Thick band with diagonal	2
	Raised appliquè band of combstamping on neck	1
	Comb stamping	8
Lose	Incised triangles with punctates as fill	14
	Incised blank triangles	11
	Punctuates fill in v-shape, wavy, or straight band	7
	Triangles or wavy band with incised perpendicular dashes	10
Imports	Band with short, incised parallel lines, located near rim	4
	Incised triangle filled with diagonal parallel lines	1
	Incised triangles filled with pin-sized punctates, bordered by double parallel lines alternating with diagonal lines, reddish-brown	1
	Incised parallel bands filled with pin-sized punctates, highly burnished	5
	Incised sideways v-shaped parallel lines - like wheat grains	1
Late Lose	Incised triangle with fill alternating between black space and diagonal bands with perpendicular lines, highly burnished	1
Indeterminate	Perpendicular short lines	5
	Diagonal incised lines	16
	Double incised parallel lines	5
	Closely spaced 2mm incised lines (many)	7
	Dashes (multiple rows) in band	5
	Incised singular line	61

Table 7.1: Categories used for classifying decorations

Unit	Level	Toutswe	Lose	Late Lose	Import	Indeterminate
1	1		1			1
	2		2			1
	All		**3**			**2**
2	1		2			1
	2			1		
	All		**2**	**1**		
4	1		4			12
	2	1				3
	3					9
	All	**1**	**4**			**24**
5	4	1				1
	5	1				10
	6					5
	All	**2**				**16**
6	1	4	9			7
	2		1		3	5
	3		1			4
	4	1	1		1	
	All	**5**	**12**		**4**	**16**
7	1	1	3		5	11
	2		11			10
	3					11
	4	1	1		3	1
	5		1			5
	All	**2**	**16**		**8**	**38**
2W2	1					
	2	1				1
	All	**1**				**1**
8	1		3			
	All		**3**			
9	1		2			
	2					
	All		**2**			
10	1					1
	All					**1**
Totals		**11**	**42**	**1**	**12**	**99**
	%	**6.7%**	**25.5%**	**0.6%**	**7.3%**	**60.0%**

Table 7.2: Ceramic types found at Khubu la Dintša by unit and level

Figure 7.5: Lose ceramics from Khubu la Dintša

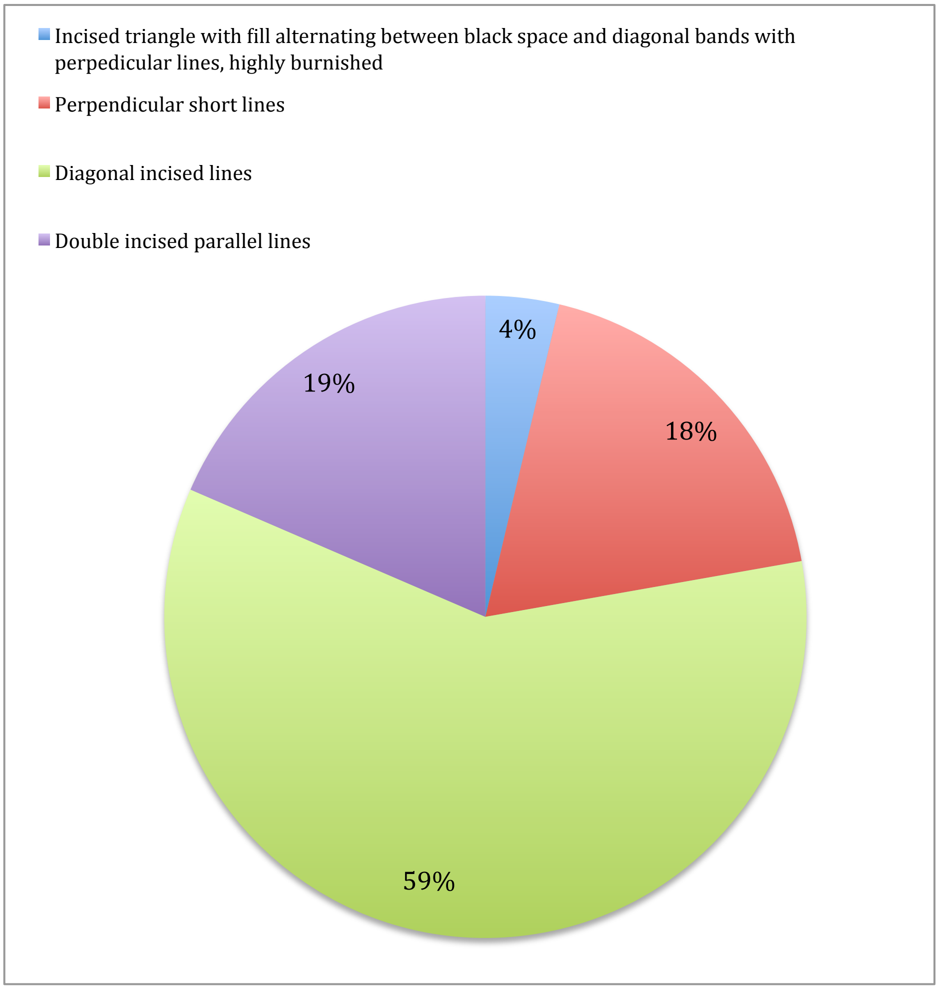


Figure 7.6: Lose ceramics, proportions by type.

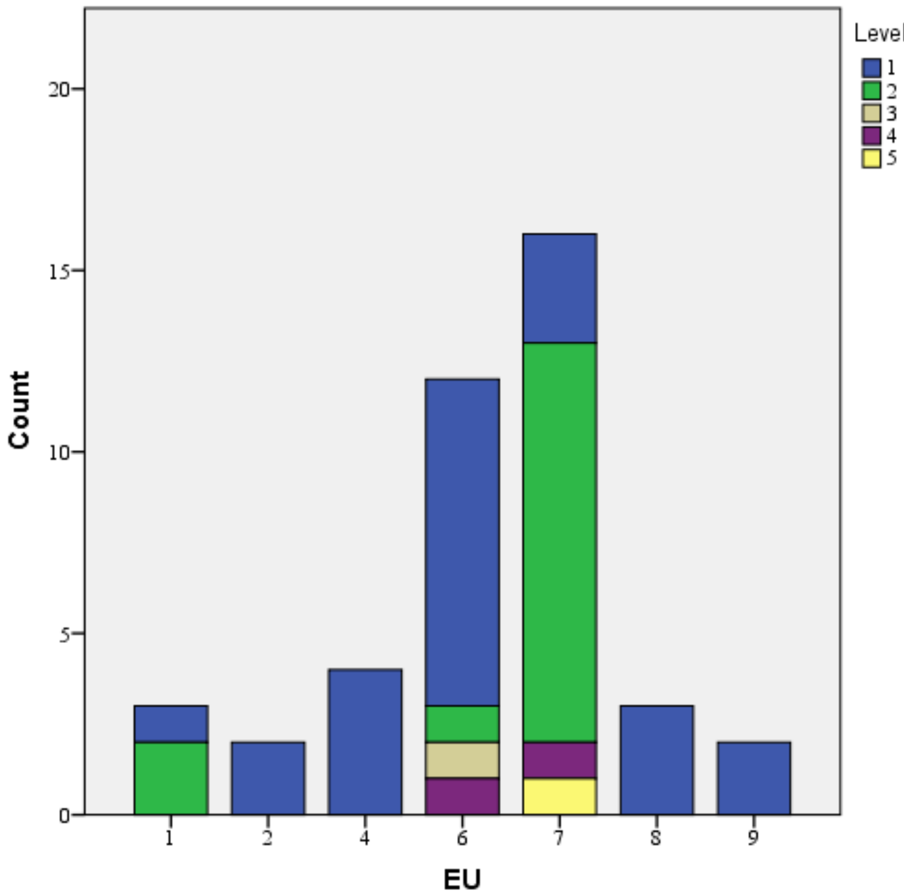


Figure 7.7: Lose ceramics, distribution by unit and level

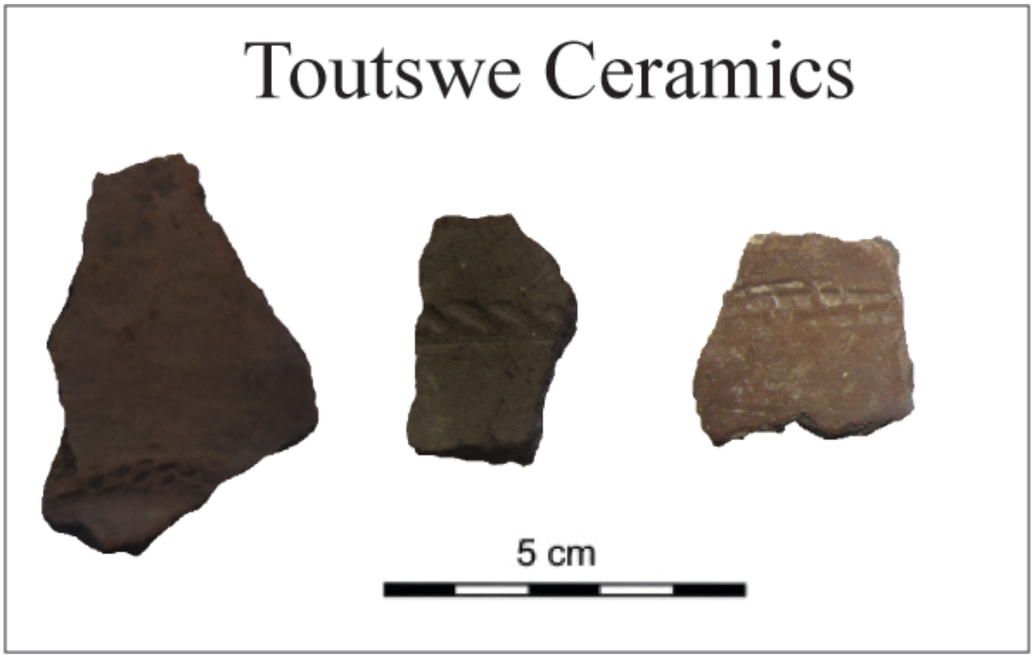


Figure 7.8: Toutswe ceramics from Khubu la Dintša

Figure 7.9: Late Lose ceramic at Khubu la Dintša.

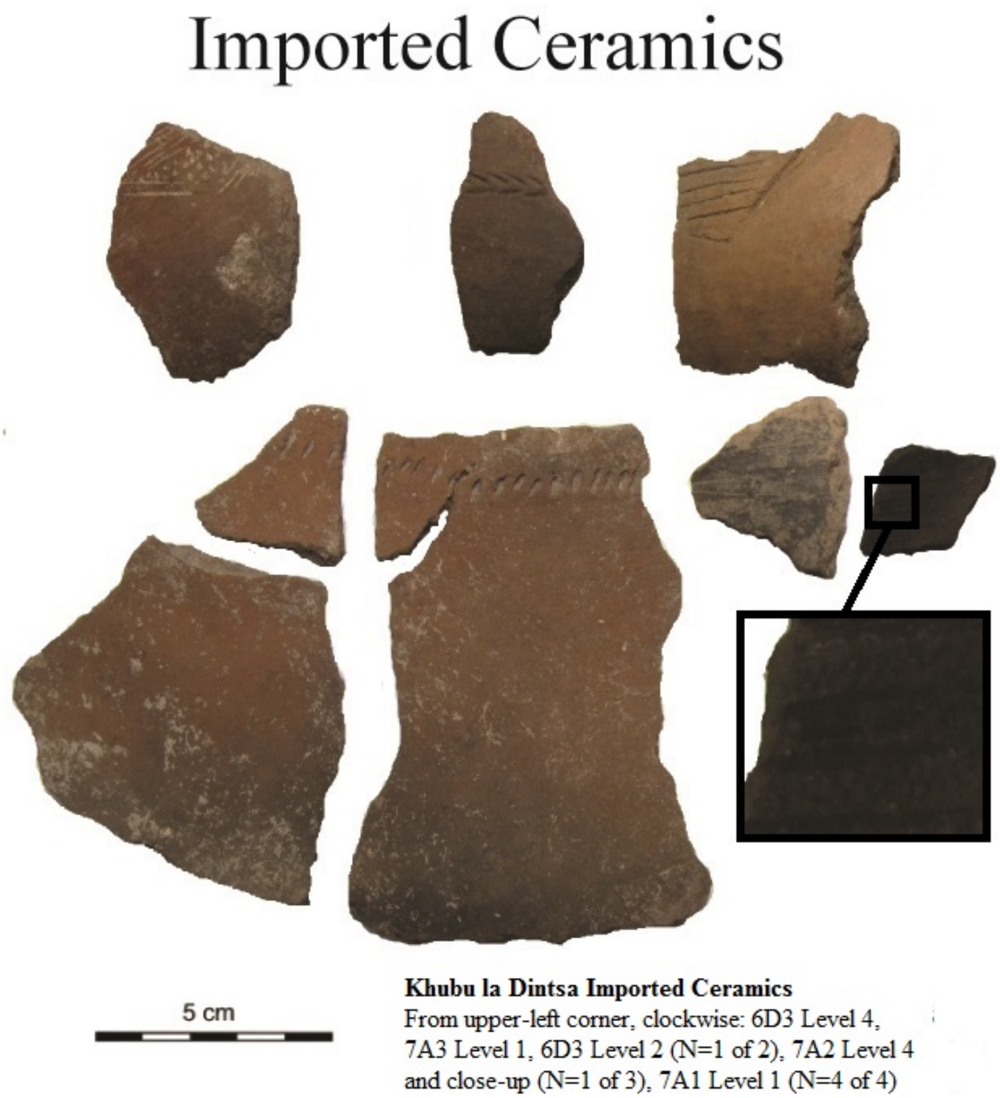


Figure 7.10: Imported ceramics at Khubu la Dintša

Figure 7.11: Cowry shell from Khubu la Dintša

Figure 7.12: Imported sherd, Unit 6D3 Level 3. Associated with cowry shell.

Figure 7.13: Imported sherd from Unit 7A2 Level 4. Associated with cowry shell.

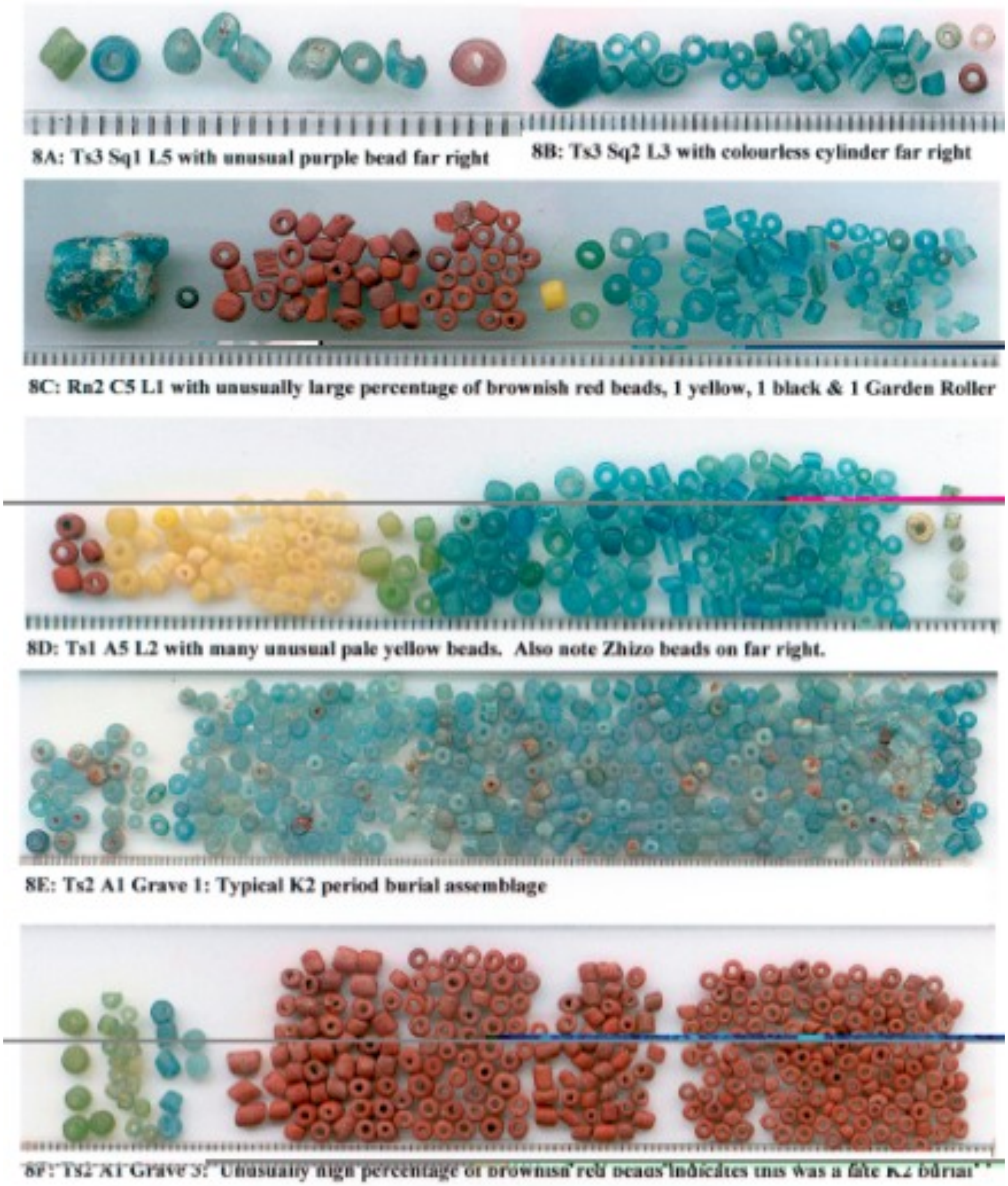


Figure 7.14: Glass beads found at the site of K2 (Wood 2005)

Figure 7.15: Glass bead chronology for southern Africa (Wood 2005, 2010, 2011). From top, left to right: Zhizo, K2, Garden Roller, Mapungubwe Oblate, Zimbabwe (not shown), Khami, Historical A (not discussed), Historical B and C (not discussed).

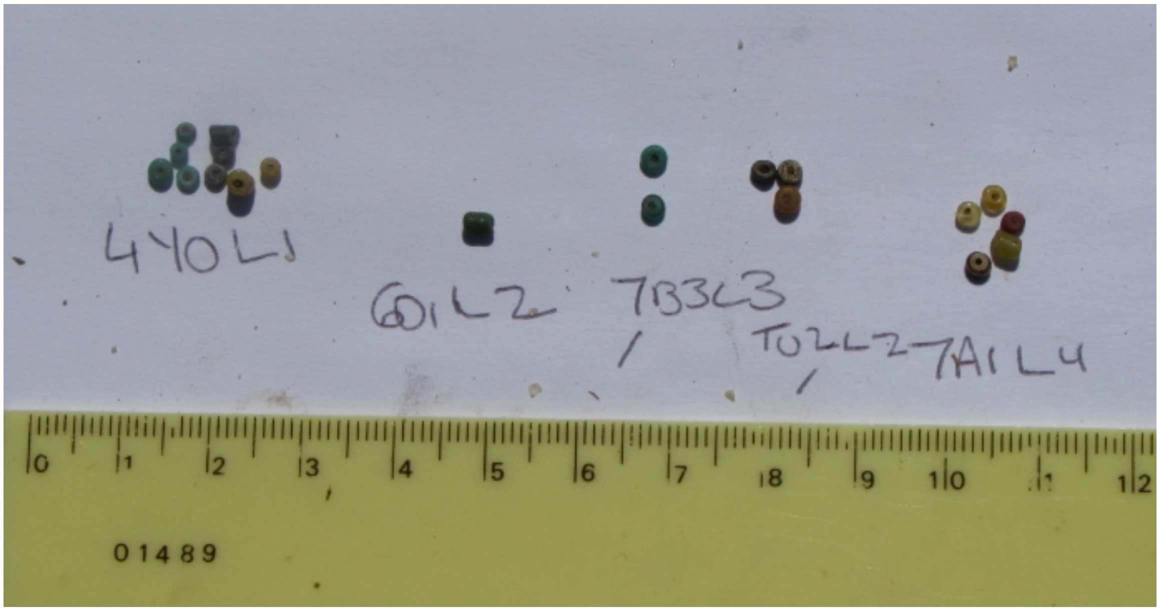


Figure 7.16: Glass beads from Khubu la Dintša

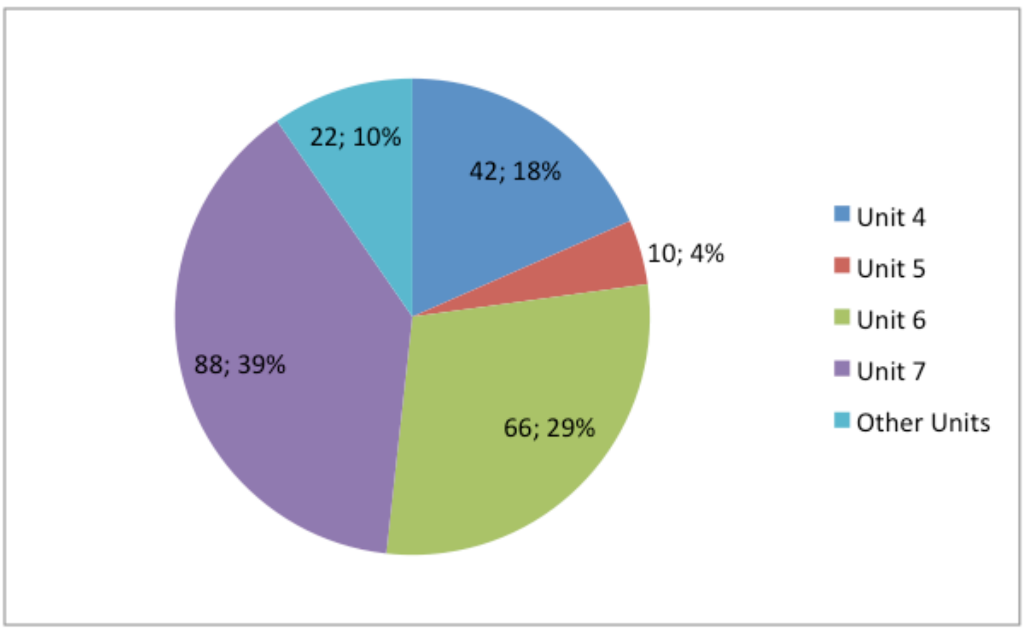


Figure 7.17: Chart of glass bead distribution by unit

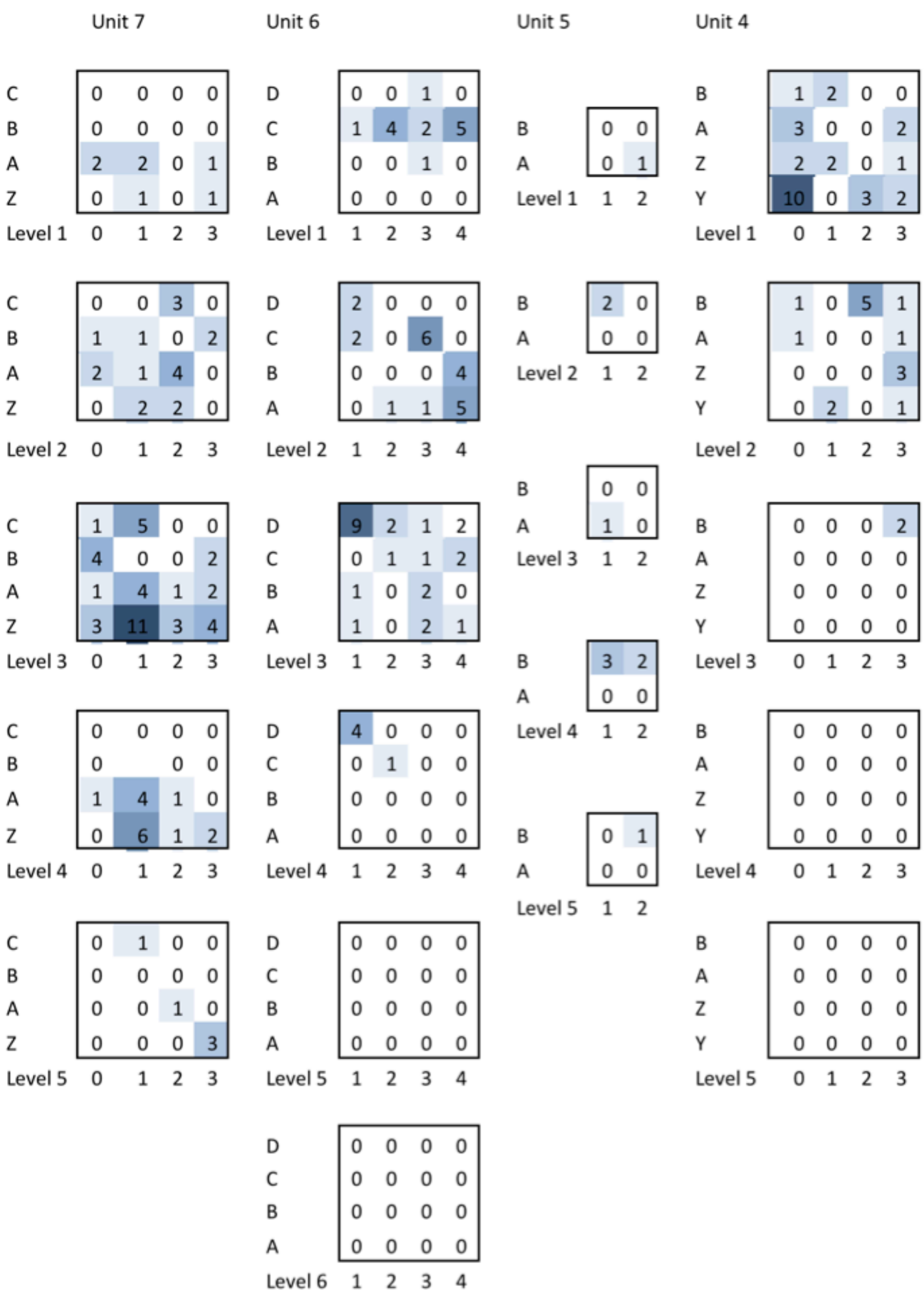


Figure 7.18: Glass bead distribution by unit/level, all excavation levels

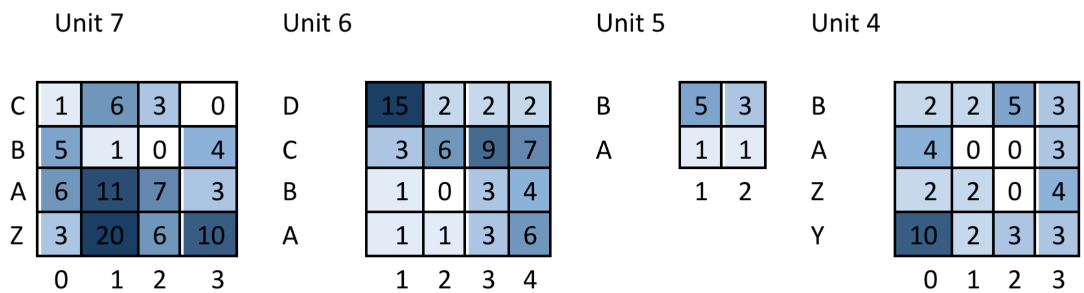


Figure 7.19: Total glass bead distributions by unit, all excavation units

Total Number of Glass Beads (by unit)		Ratio (Versus Unit 5*)
Unit 7	86	2.15
Unit 6	65	1.63
Unit 4	46	1.15
Unit 5	10	N/A
Unit 5*	40	1

Table 7.3: Ratios of glass beads, by excavation unit. 5* indicates standardized Unit 5 quantities

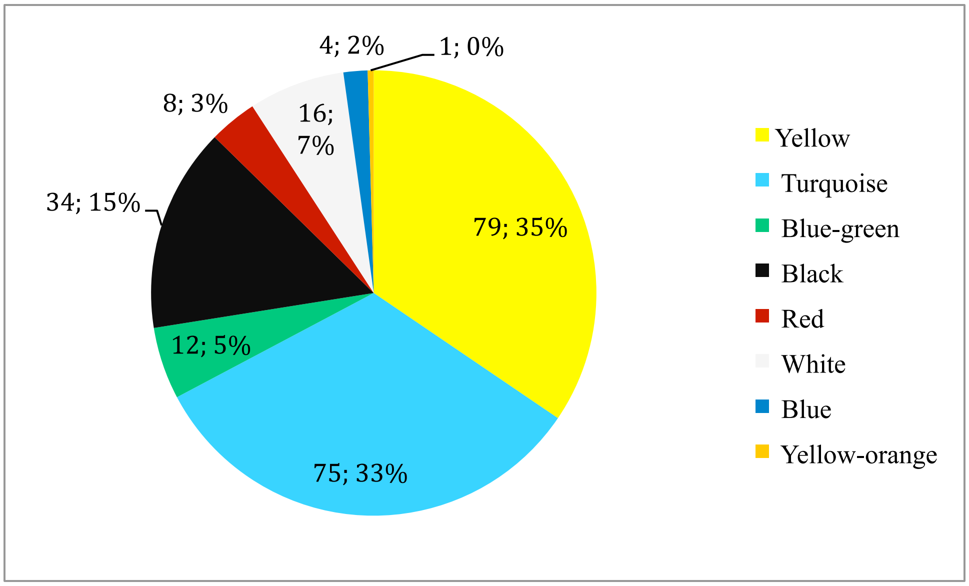


Figure 7.20: Colors of glass beads at Khubu la Dintša

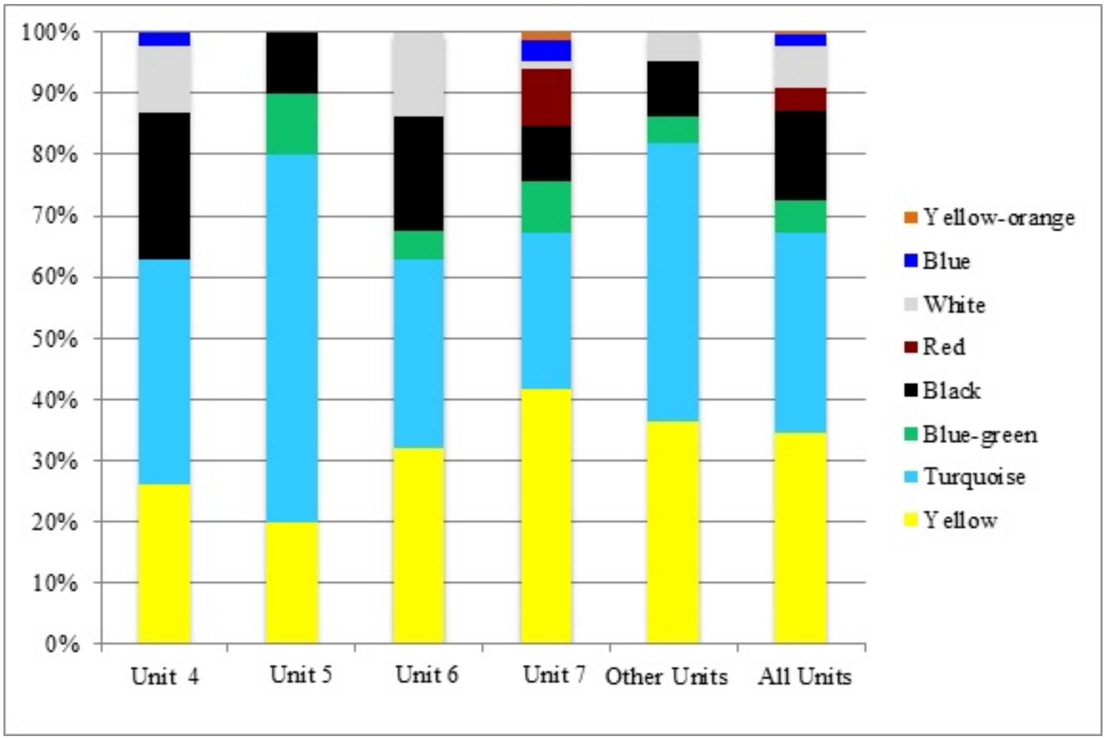


Figure 7.21: Compositions of the excavation units by glass bead color

Blue	Blue-Green	Green
10B 4/4	10BG 6/4	10G 3/4
2.5 PB 3/8	10G 6/4	10G 6/4
2.5PB 5/4	2.5 BG 6/2	10G 7/1
5PB 3/6	2.5B 3/6	10GY 4/4
5PB 4/6	2.5B 4/6	10GY 5/4
7.5 PB 2/10	2.5B 5/6	10GY 6/4
7.5 PB 3/8	2.5B 6/4	2.5G 4/4
2.5PB 3/6	2.5B 6/6	2.5G 5/6
2.5PB 4/6	2.5B 7/4	2.5GY 6/4
2.5PB 5/4	2.5BG 6/2	5G 5/4
2.5PB 5/6	5B 5/4	5GY 5/6
2.5PB 6/6	5BG 5/4	5GY 6/2
	5G 5/4	5GY 6/4
	7.5 BG 5/6	7.5 GY 6/6
	7.5B 4/8	7.5GY 5/6
	7.5B 6/8	5GY 6/4
	7.5BG 5/4	
	10BG 5/2	
	10BG 8/4	
	7.5BG 6/6	
Red cells indicate overlap in classification		

Table 7.4: Munsell colors for Wood's blue, blue-green, and green categories. Adopted from Wood 2011.

Munsell Color	Klehm	Wood	Color Comparison
5.0G 5/4	Turquoise	Green	
10.0G 4/5	Turquoise		Green
7.5G 5/6	Turquoise	Green	
5.0B 6/6	Turquoise		Blue-green
5G 6/6	Turquoise		Green
7.5BG 6/6	Turquoise	Blue-Green	
2.5B 6/4	Turquoise	Blue Green	
10GY 6/6	Turquoise		Green
10.0BG 3/6	blue		Blue
2.5PB 5/4	Blue	Blue	
10.0B 5/6	Blue		Blue

Table 7.5: Munsell colors and classification for Khubu la Dintša glass beads and corresponding Wood reclassification

Plum	Brownish-Red
10R 2/4	10R 3/8
10R 4/4	5R 3/6
5R 3/6	
Red cells indicate overlap	

Table 7.6: Munsell colors for Wood's (2011) brownish-red and plum categories

Khubu la Dintša	Number	Yellow	Blue-green/Green	Brownish-Red/Plum	Blue	Yellow-Orange	Black	White
Units 5 and 6 'Early Lose'	75	30.7%	40.0%	0.0%	0.0%	0.0%	17.3%	12.0%
Unit 4 and 7 'Middle Lose'	132	36.4%	34.8%	6.1%	3.0%	0.8%	14.4%	4.5%
All Beads*	**229**	**34.5%**	**38.0%**	**3.5%**	**1.8%**	**0.4%**	**14.8%**	**7.0%**
*All Bead includes the 22 glass beads found in the test units								

Southern African beads (Wood 2011)	Number	Yellow	Blue-Green/Green	Brownish-Red/Plum	Blue	Orange	Black	White
East Coast Indo-Pacific	4450	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mapungubwe Oblate	4779	2.4%	11.4%	0.3%	2.3%	0.4%	83.3%	0.0%
Zimbabwe	130	10.8%	57.7%	10.8%	10.0%	6.2%	4.6%	0.0%
Khami	823	11.2%	35.6%	10.3%	31.0%	4.7%	5.5%	3.0%

Bosutswe (Robertshaw et al 2010, Wood 2011)	Number	Yellow	Blue-Green/Green	Brownish-Red/Plum	Blue	Orange	Black	White
Garden Roller	1	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mapungubwe Oblate	14	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Khami	19	47.4%	15.8%	26.3%	0.0%	10.5%	0.0%	0.0%
* Zhizo beads excluded from table								

Table 7.7: Comparison between Khubu la Dintša glass beads and Wood's glass beads

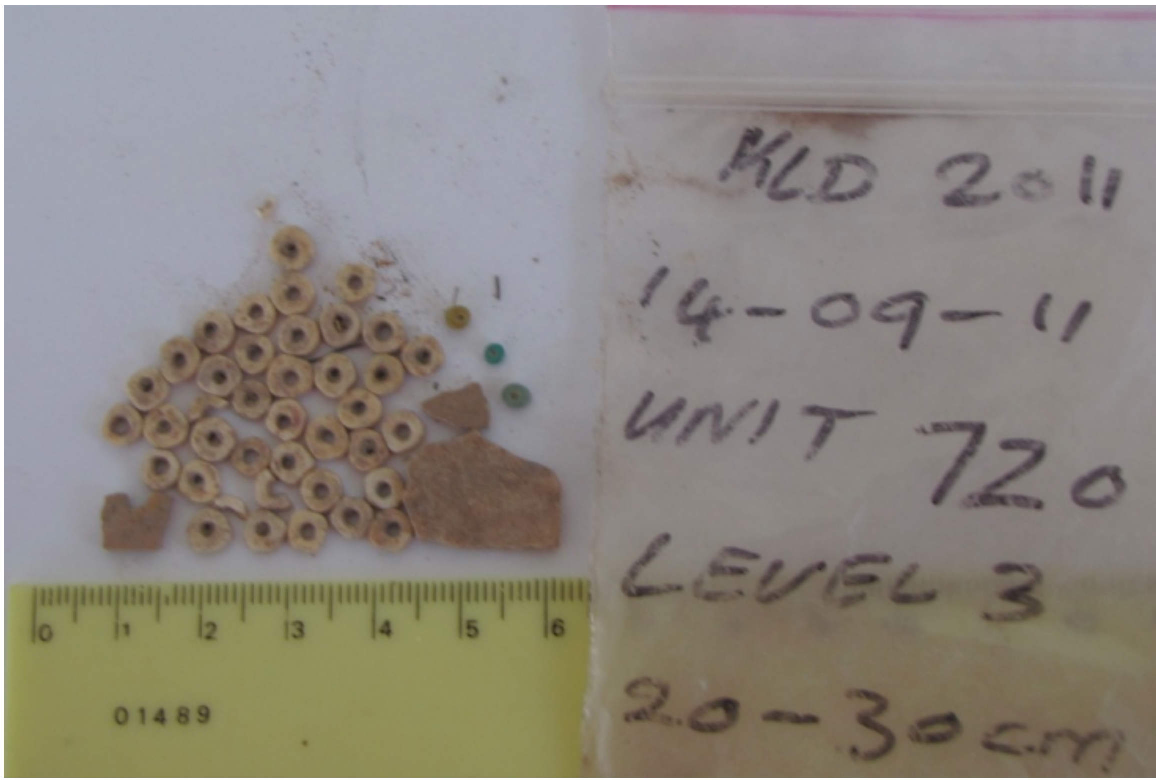


Figure 7.22: Ostrich eggshell beads from Unit 7Z0 Level 3

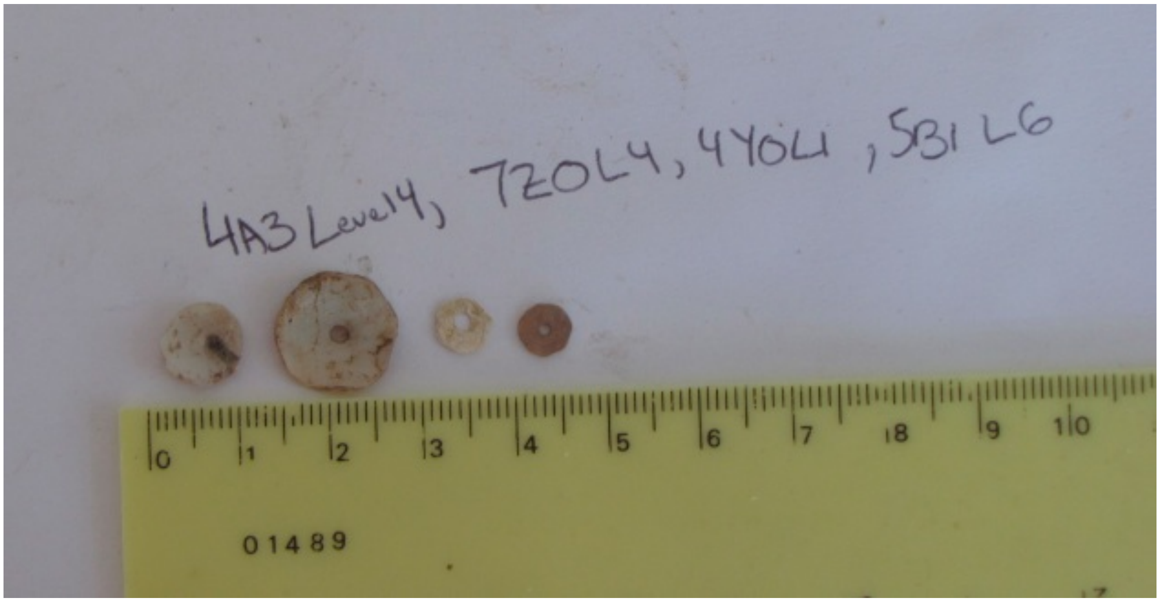


Figure 7.23: Examples of "other" shell beads from Khubu la Dintša. Units from left to right: 4A3 Level 4, 7Z0 Level 4, 4Y0 Level 1, 5B1 Level 6.

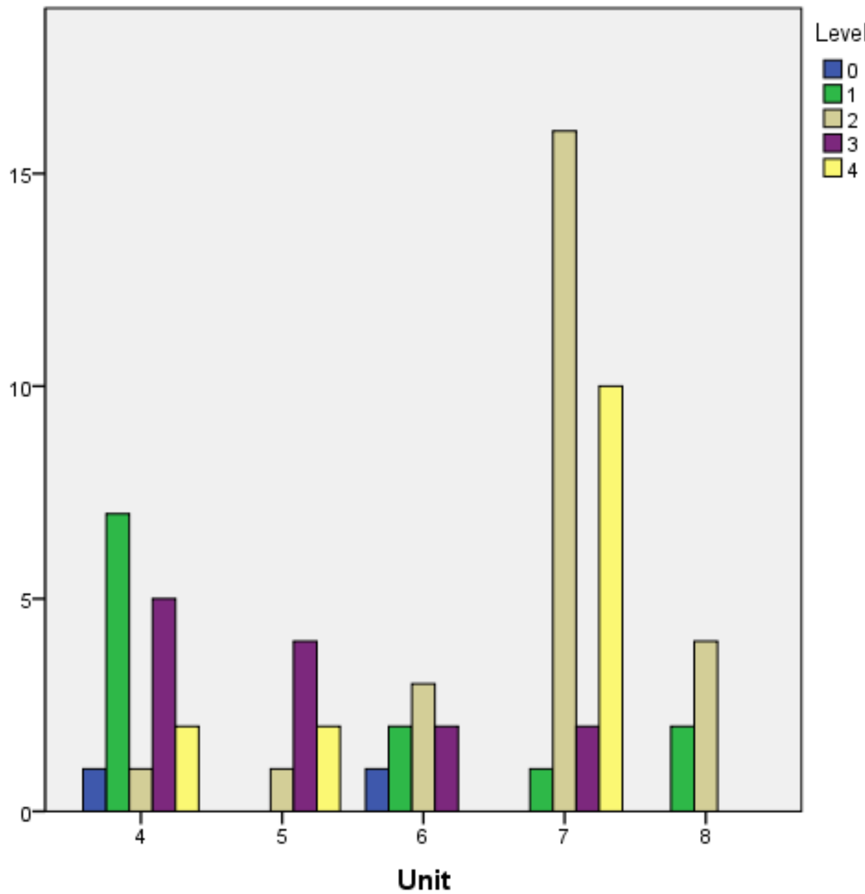


Figure 7.24: "Other" shell beads, distribution by unit.

Figure 7.25: Wound bronze helices from Bosutswe. Denbow and Miller 2007:286.

Total Beads		37	
from	Unit 6	25	67.57%
	Unit 7	5	13.51%
	Unit 4	5	13.51%
	TU 10	2	5.41%

Table 7.8: Metal beads from Khubu la Dintša, distribution by unit.

Figure 7.26: Copper beads from Khubu la Dintša

Known Beads		36	
Copper Beads		14	38.89%
from	Unit 6		92.86%
	Unit 7		7.14%
Iron Beads:		22	59.46%

Table 7.9: Distribution of copper versus iron beads

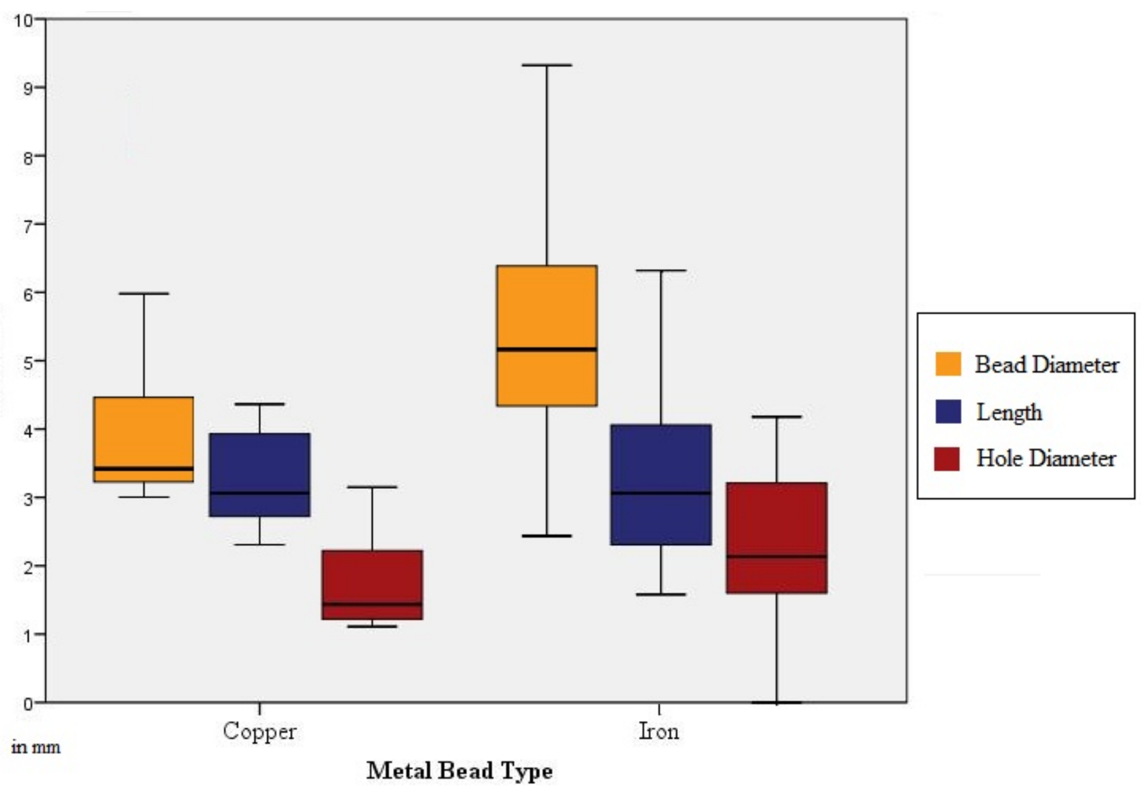


Figure 7.27: Bead diameter, length, and hole diameter for metal beads.

Descriptive Statistics - Copper

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Length	14	2.03	2.29	4.32	3.21	.718
Width	14	2.94	3.00	5.94	3.89	.946
HoleSize	14	2.04	1.11	3.15	1.70	.613
WidthtoLength	14	.70	.85	1.55	1.2258	.20513
Valid N (listwise)	14					

Descriptive Statistics - Iron

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Length	22	4.68	1.57	6.25	3.17	1.179
Width	22	6.80	2.53	9.33	5.34	1.574
HoleSize	22	4.18	.00	4.18	2.23	.987
WidthtoLength	22	5.54	.40	5.94	1.9706	1.12389
Valid N (listwise)	22					

Table 7.10: Descriptive statistics for metal beads, by type

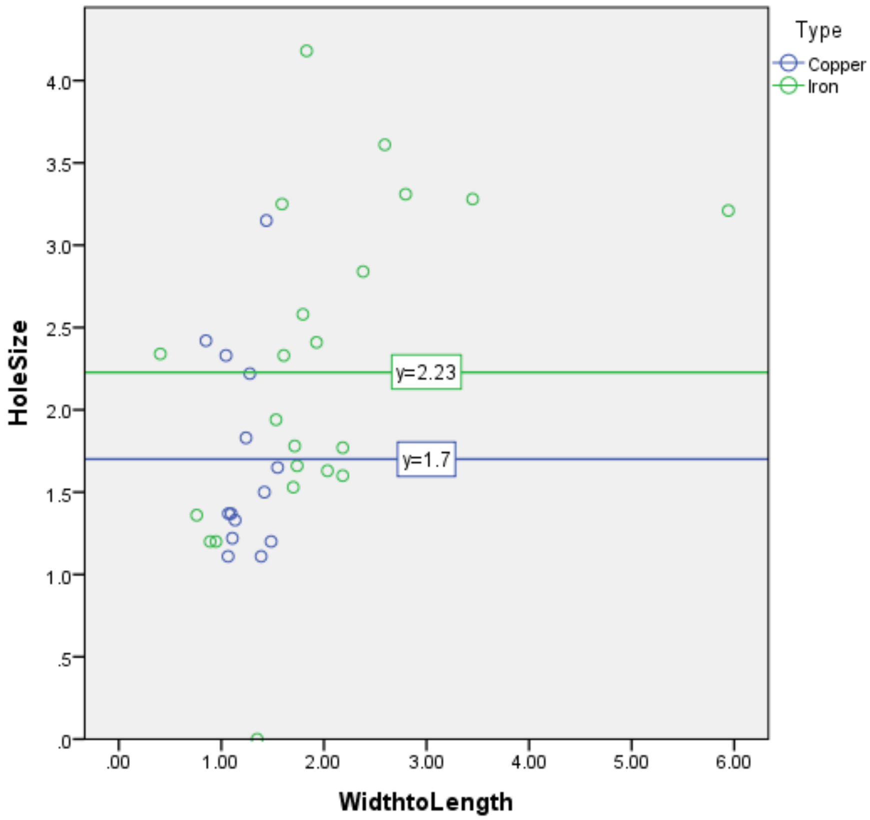


Figure 7.28: Hole size versus width-to-length ratio for metal beads, by type

Layer	Time Period	Name
19-17	700-900	Taukome
16	Late 900's, early 1000's	
15-14	1000's	
13-10	1000's	Toutswe
9-6	1100's	
5-3	1200-1400	Lose
2-1	1400-1600	

Table 2-1. Levels from Western Precinct with corresponding dates and cultural periods (Taken from Atwood 2005).

Layer	Time Period	Name
21-12	1150-1300	Lose
11-6	1300-1450	
6-1	1450-1600	

Table 2-2. Levels from Central Precinct with corresponding dates and cultural periods.

Table 7.11: Atwood (2005) and Dubroc (2010) categories for Bosutswe levels, by time period

Site	Period*	Glass Beads	Metal Beads	OES Beads	Other Shell Beads
Total Count					
Bosutswe	Early Lose	22	1	316	15
	Middle Lose	14	22	475	56
	Late Lose	37	3	440	40
	All Lose	**73**	**26**	**1231**	**111**
Khubu la Dintša		**229**	**37**	**852**	**69**
Per unit**					
Bosutswe	Early Lose	1.81	0.08	25.97	1.23
	Middle Lose	0.74	1.16	25.00	2.95
	Late Lose	2.06	0.17	24.44	2.22
Khubu la Dintša		**3.82**	**0.62**	**14.20**	**1.15**
Per unit/level**					
Bosutswe	Early Lose	0.34	0.01	2.16	0.10
	Middle Lose	0.15	0.23	5.00	0.59
	Late Lose	0.15	0.03	4.07	0.37
Khubu la Dintša		**0.96**	**0.16**	**3.58**	**0.29**

* Levels 12-23 are identified as Early Lose (CE 1200-1300), 7-11 as Middle Lose (CE 1300-1450), and 1-6 as Late Lose (CE 1450-1700). Khubu la Dintša dates as an Early and Middle Lose site

** Concentrations per unit and unit/level were only calculated by period at Bosutswe due to the varying number of units in the Central Precinct

Table 7.12: Bead comparison between Lose levels at Bosutswe and Khubu la Dintša, by bead type, period, and concentration per unit/level

Chapter 8

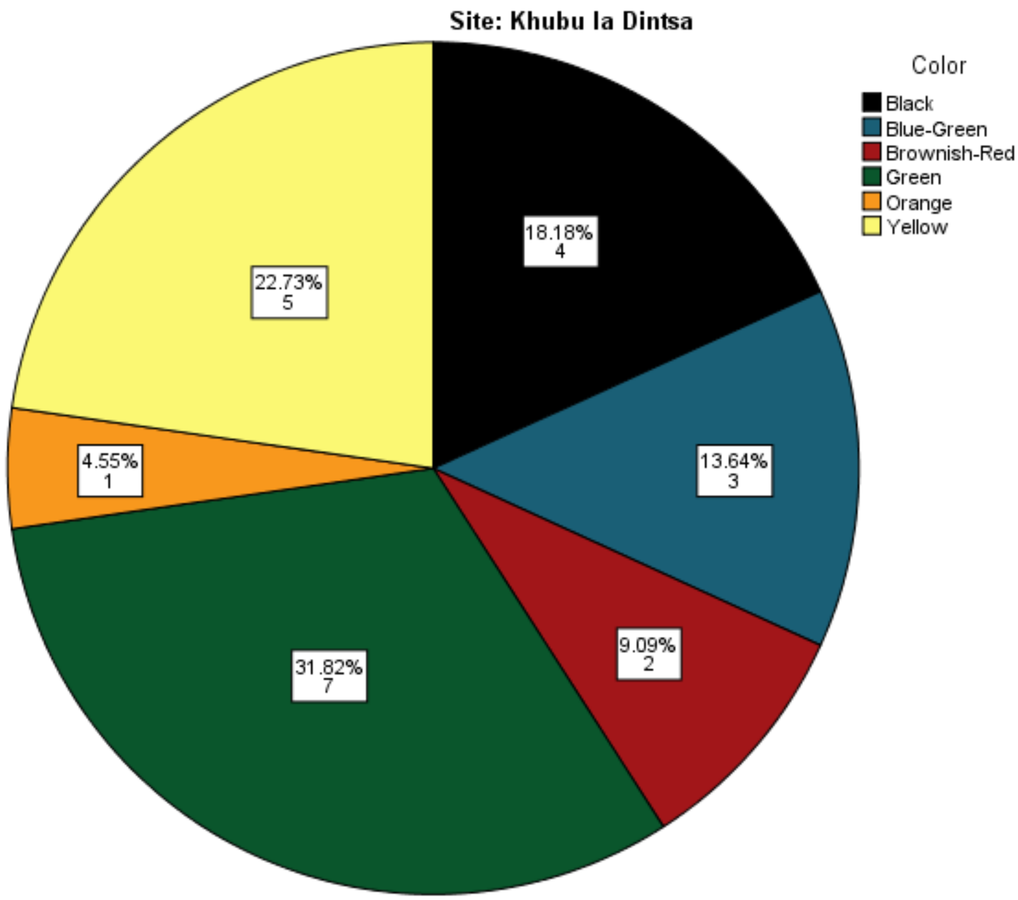


Figure 8.1: Colors of the glass beads considered in the macroscopic and chemical analyses for Khubu la Dintša

Figure 8.2: Blue-green wound bead from Unit 5B2 Level 5

Site		N	Minimum	Maximum	Mean	Std. Deviation
Khubu la Dintsa	Length	21	1.09	3.94	2.0838	.73485
	Width	21	2.15	4.10	2.8871	.44648
	Hole Size	21	.26	1.02	.6171	.18486
	Length:Width Ratio	21	.42	1.11	.7168	.20207
	Valid N (listwise)	21				

Table 8.1: Descriptive statistics for drawn beads, macroscopic analysis

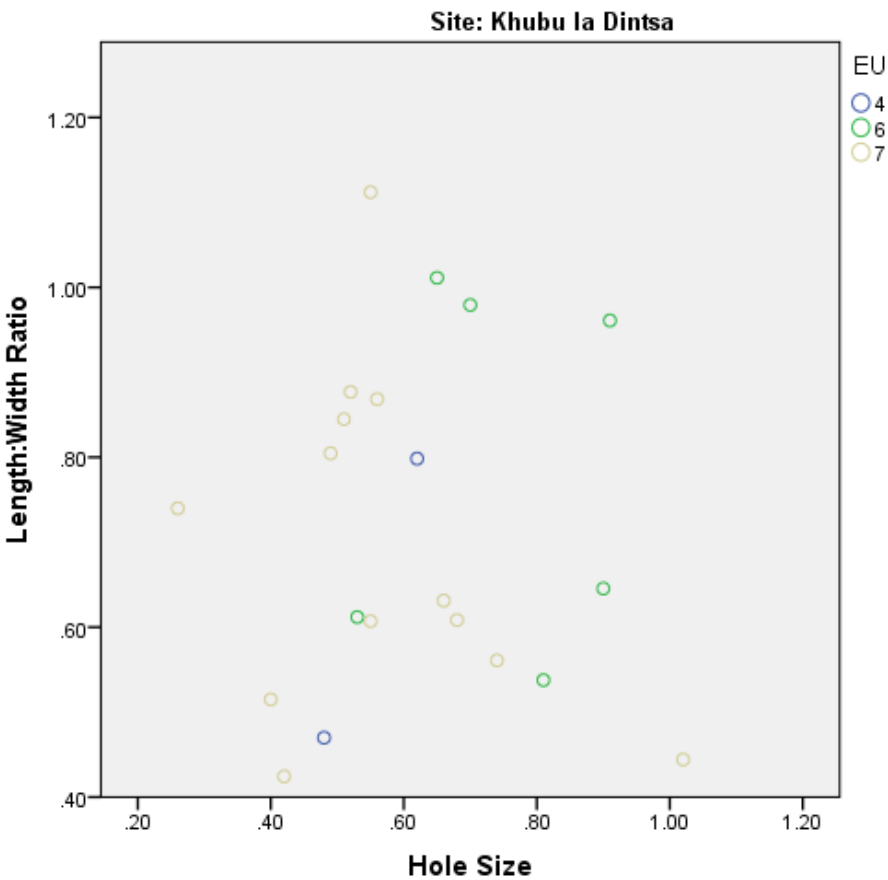


Figure 8.3: Length-width ratio versus hole size, by unit

Khubu la Dintša		
	Plant-ash	Mineral soda
Na2O	13.90%	17.49%
MgO	4.28%	0.77%
Al2O3	6.32%	9.74%
SiO2	58.00%	62.35%
K2O	3.36%	3.94%
CaO	7.03%	3.11%
Fe2O3	1.56%	2.27%
*N	21	1

Table 8.2: Average values for major elements in Khubu la Dintša glass beads

Major chemical compositions

	Zhizo	K2	K2 GR	Indo-Pacific	Islamic	Map Oblate	Zimbabwe
Na2O	13.15	16.22	14.36	14.75	13.71	13.47	15.81
MgO	4.31	0.43	0.37	0.59	4.83	5.8	4.33
Al2O3	3.26	11.85	16.63	13	6.05	7.67	6.71
SiO2	69.62	64.51	61.05	63.08	63.21	61.88	60.98
K2O	3.23	3.34	3.39	3.46	3.91	3.47	3.74
CaO	5.5	2.34	2.85	2.85	6.63	6.66	6.94
Fe2O3	0.94	1.3	1.35	2.27	1.66	1.04	1.48
*N	16	29	11	38	3	57	90

Table 8.3: Average values of major elements in southern African bead series (adapted from Robertshaw 2010)

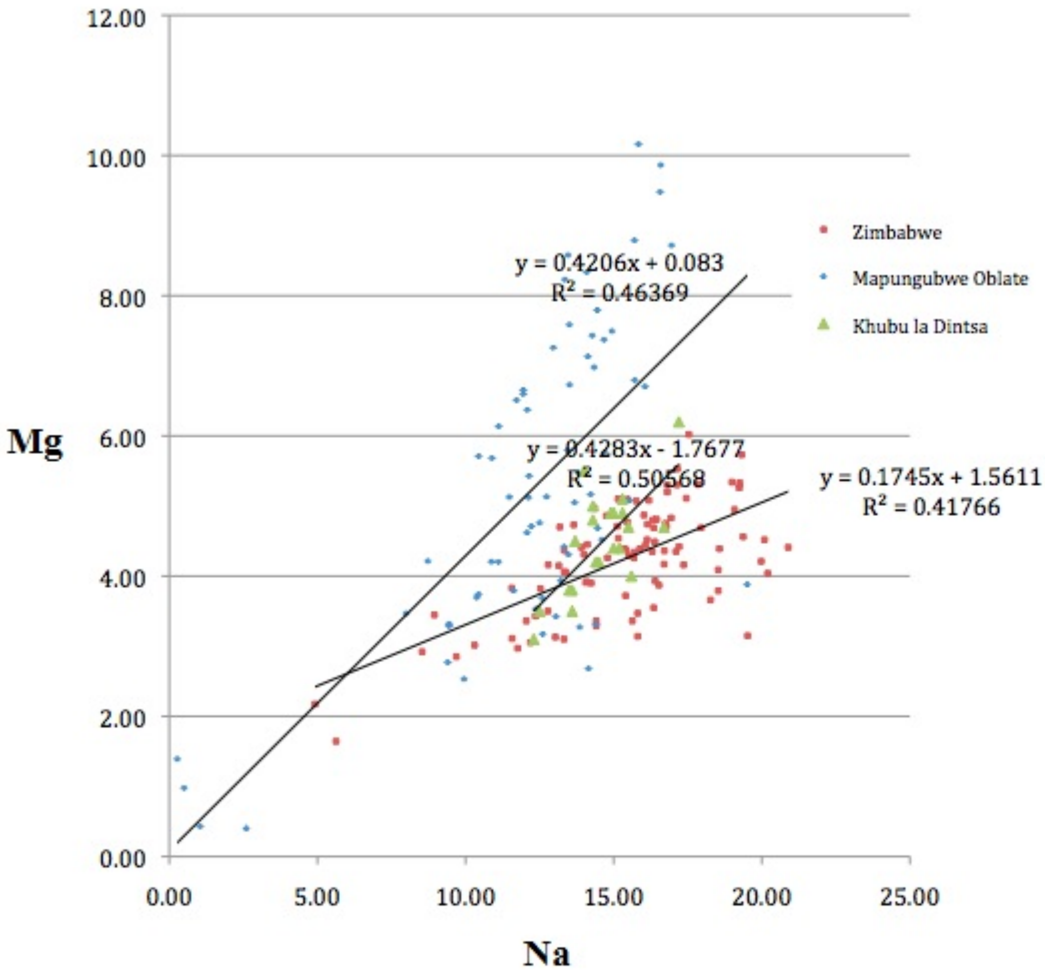
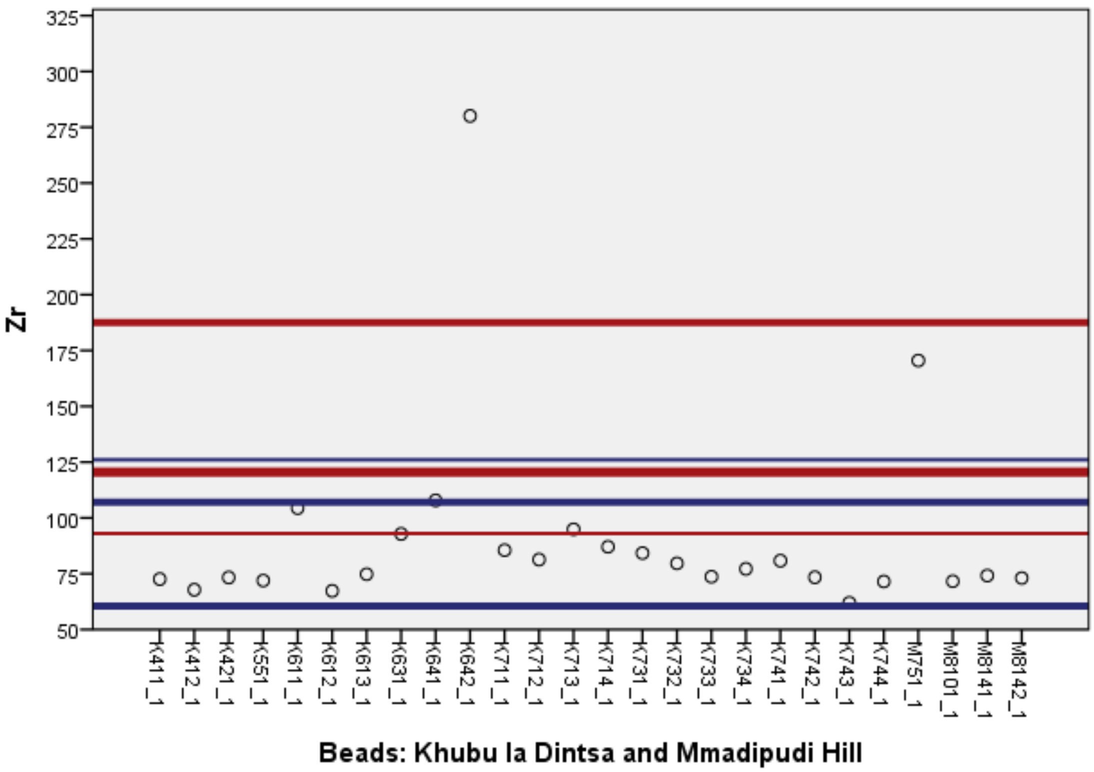


Figure 8.4: Scatter plot with best-fit lines of reduced concentrations of MgO and Na_20 for Mapungubwe Oblate, Zimbabwe series, and Khubu la Dintša plant ash glass beads. Data for the Mapungubwe Oblate and Zimbabwe series beads obtained from Robertshaw et al 2010.



Thick and thin lines indicate the one and two standard deviation ranges for Mapungubwe Oblate (blue) and Zimbabwe (red) series beads. Thick lines are one standard deviation, and are shown from both the upper and lower limits. Thin lines indicate two standard deviations; only the lower 2SD for Zimbabwe series and the upper 2SD for Mapungubwe Oblate beads are indicated on the chart.

Figure 8.5: Zirconium levels in Khubu la Dintša and Mmadipudi Hill glass beads compared to the first and second standard deviations of Mapungubwe Oblate and Zimbabwe series beads

Figure 8.6: Burial goods associated with Burial 72 in the Newton Cemetery, Barbados (Handler 2007)

Figure 8.7: Glass beads left as tribute by the *phekolo* ceremony

Chapter 10

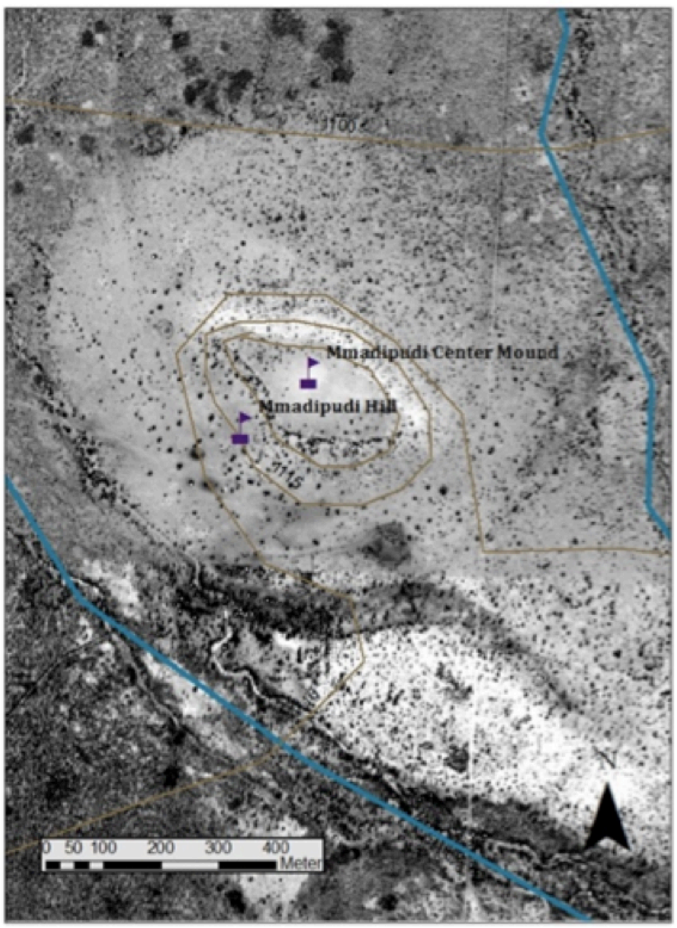


Figure 10.1: Orthophotograph of Mmadipudi Hill

Figure 10.2: View of Mmadipudi Hill hilltop from the north. Main kraal is seen in center. The test excavation is to the left.

Figure 10.3: Geophysical survey at Mmadipudi Hill in August 2011. Dr. Eileen Ernenwein in the foreground conducting GPR survey, and Katie Simon in the background conducting EM survey.

Figure 10.4: View from west of the Mmadipudi Hill geophysical survey area. Test excavation on the left side of the photo. Second, smaller kraal in the background.

Figure 10.5: Photo from the north of the geophysical survey area

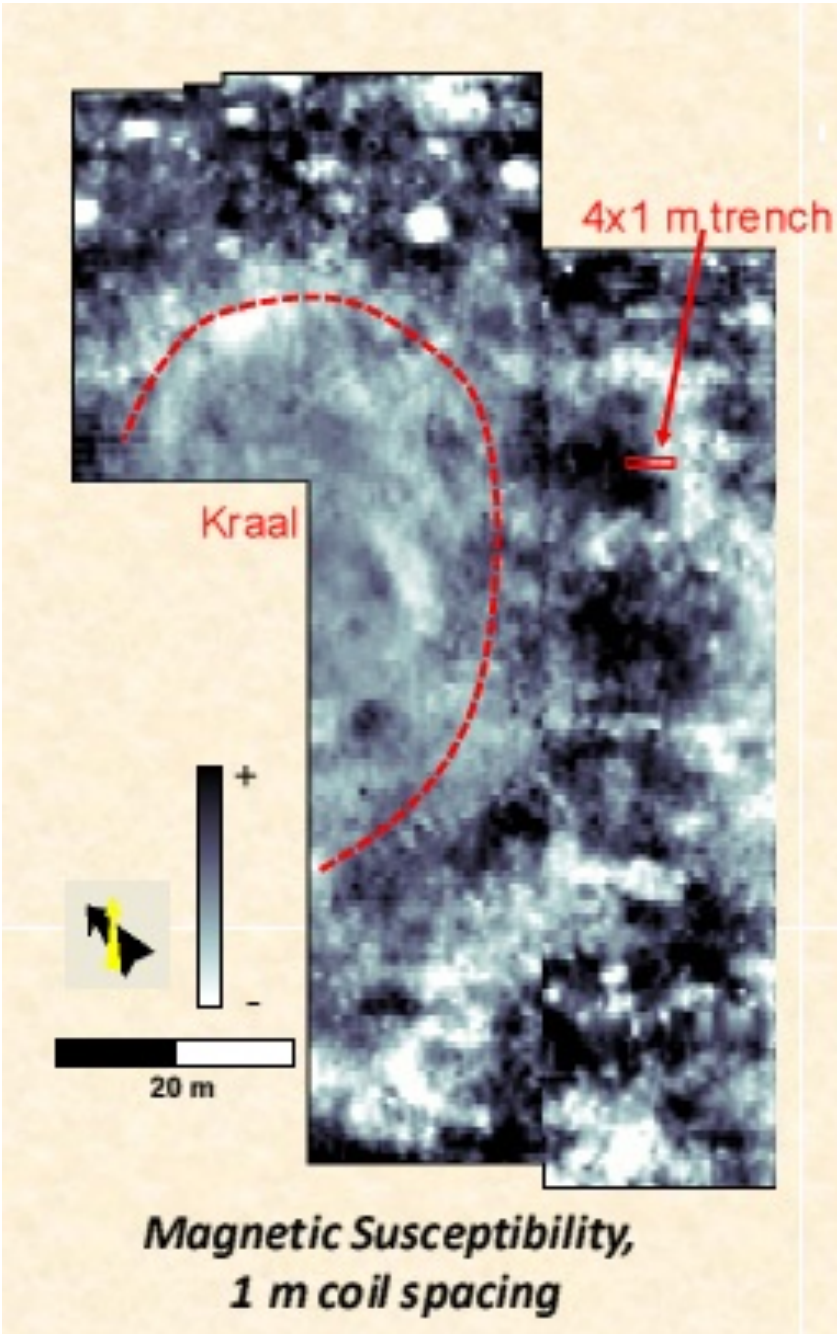


Figure 10.6: Results from the magnetic susceptibility survey at Mmadipudi Hill. Imagery processing and graphic credits: Dr. Eileen Ernenwein.

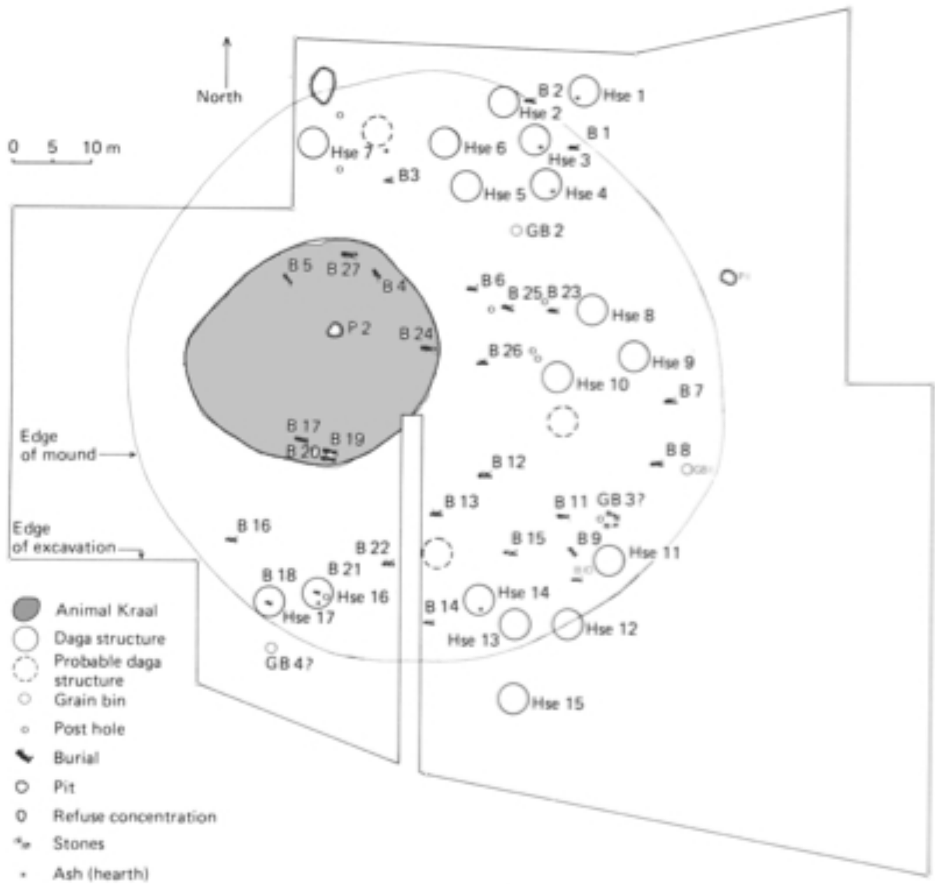


Figure 10.7: Site map of Kgaswe near Serowe (Denbow 1986)

Figure 10.8: Toutswe ceramics from Levels 1-6 at Mmadipudi Hill

Figure 10.9: Taukome ceramics from Levels 10-15 at Mmadipudi Hill

Figure 10.10: Imported ceramics from Level 2 at Mmadipudi Hill

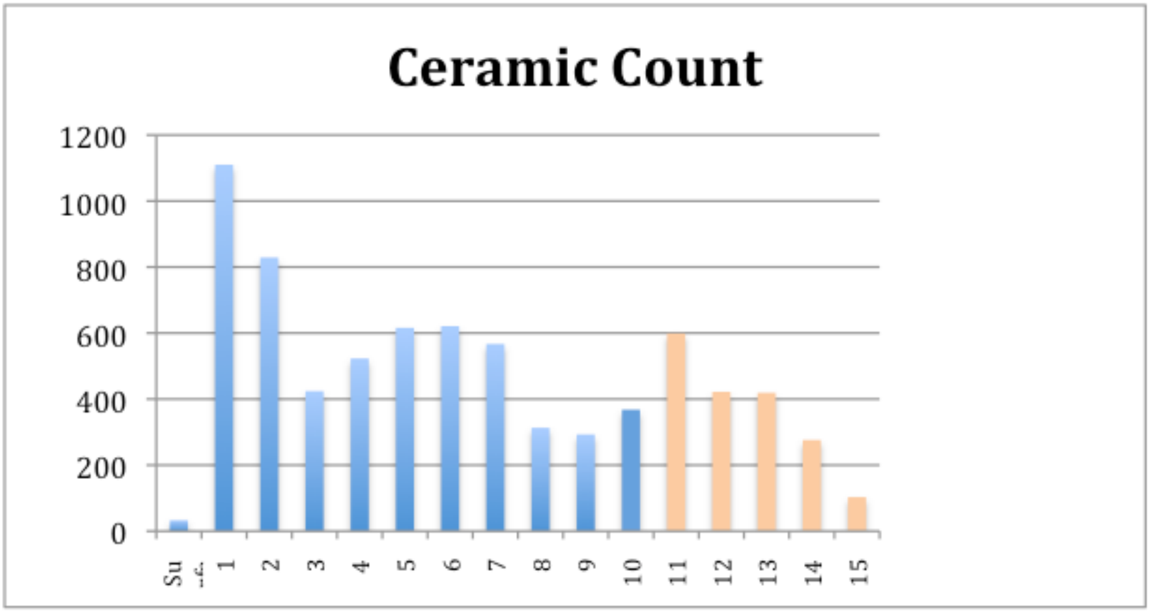


Figure 10.11: Ceramic count by level in the Mmadipudi Hill test unit

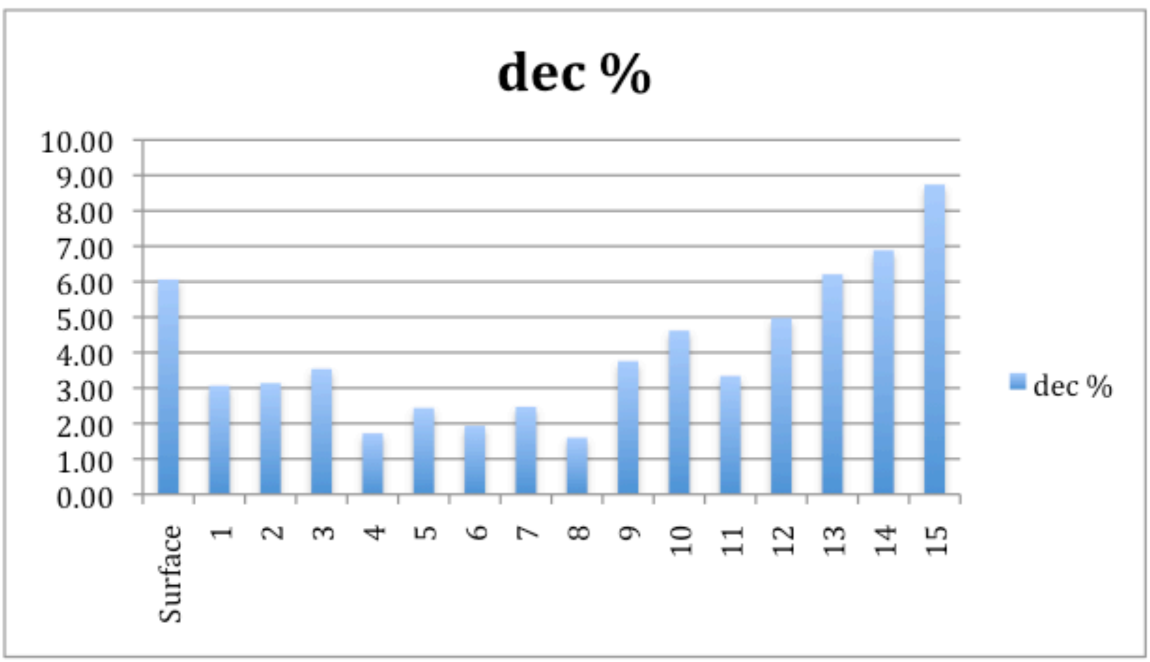


Figure 10.12: Percentage of decorated ceramics by level in the Mmadipudi Hill test unit

Unit	Level	Depth BD	Daga (g)
7E1.5N	House	100-150	117
8E1.5N	House	100-150	12
9E1.5N	House	100-150	31
10E1.5N	House	100-150	7

Table 10.1: Daga concentrations in the house levels at Mmadipudi Hill

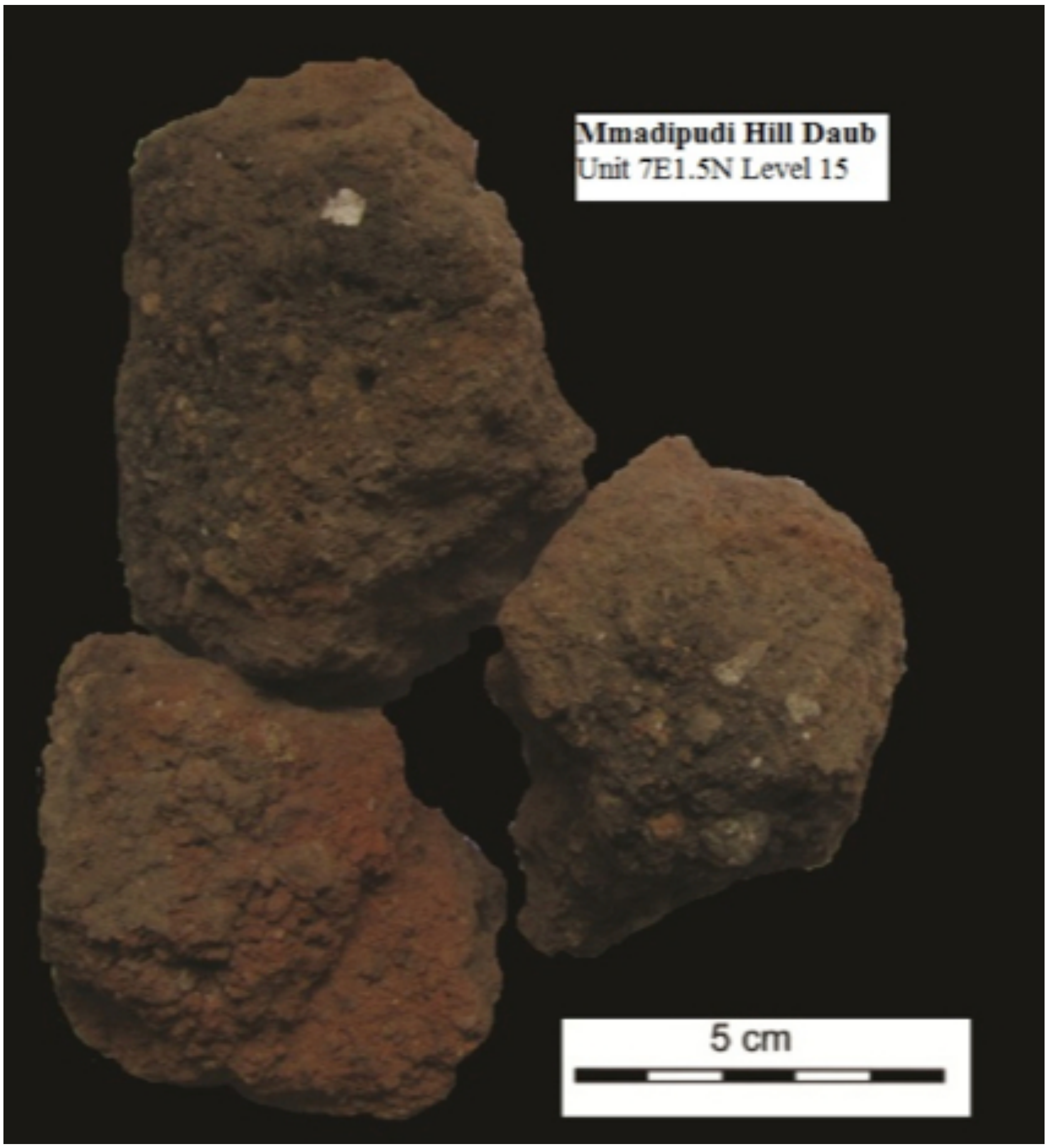


Figure 10.13: Photo of daga from Unit 7E1.5N Level 15 at Mmadipudi Hill

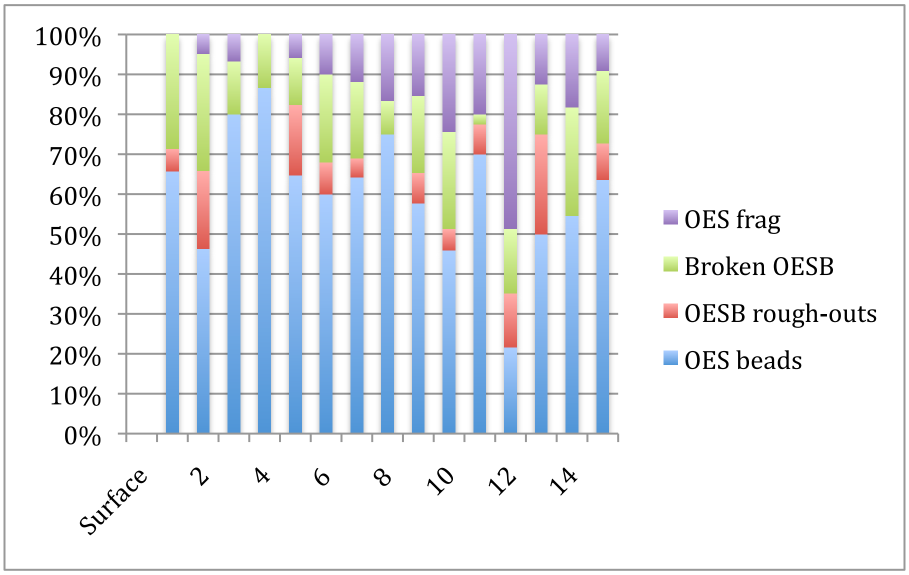


Figure 10.14: Proportion of ostrich eggshell bead types by level

	M810-1_1	M814-1_1	M814-2_1	M75-1_1
SiO2	65.4%	66.9%	67.6%	65.2%
Na2O	14.2%	13.8%	13.4%	18.7%
MgO	3.8%	3.4%	4.7%	0.5%
Al2O3	3.6%	3.8%	3.9%	7.7%
P2O3	0.3%	0.2%	0.2%	0.1%
K2O	3.5%	4.4%	3.7%	3.7%
CaO	6.5%	5.8%	5.1%	2.4%
MnO	1.0%	0.5%	0.3%	0.0%
Fe2O3	1.2%	1.0%	1.0%	1.2%
CuO	0.1%	0.0%	0.0%	0.4%
SnO2	0.0%	0.0%	0.0%	0.0%
PbO2	0.4%	0.1%	0.1%	0.0%

Table 10.2: Major elements in the Mmadipudi Hill beads selected for chemical analysis

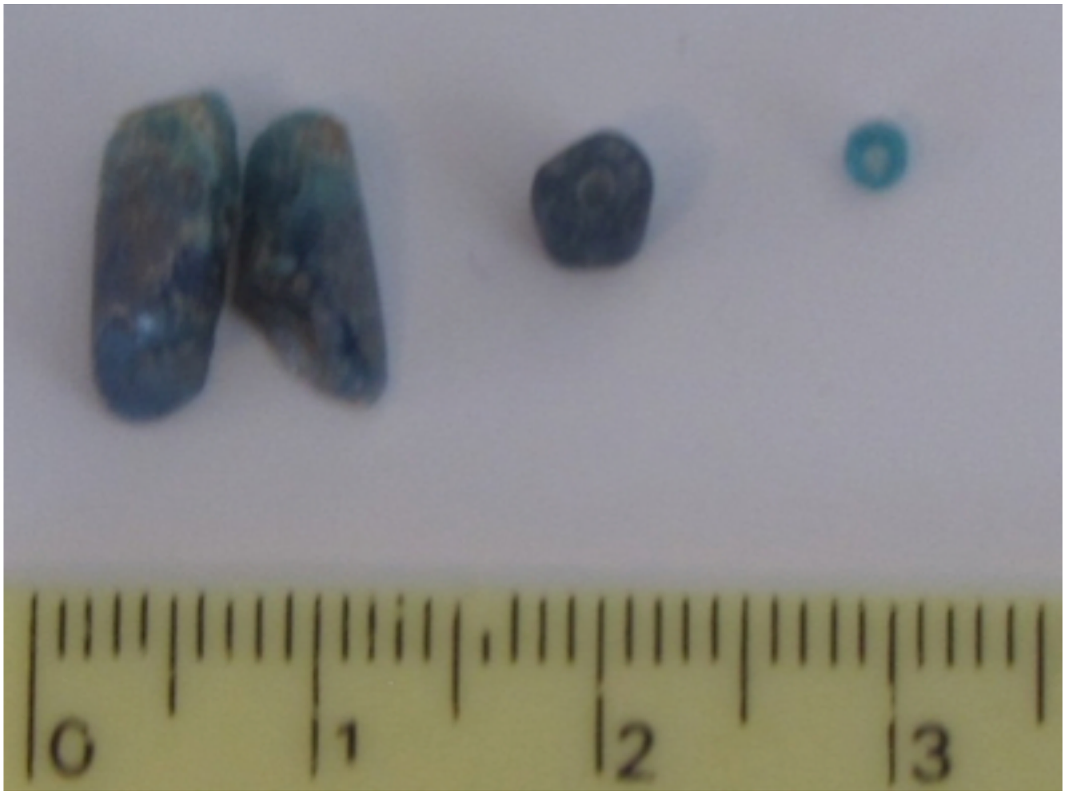


Figure 10.15: Blue and turquoise Garden Roller bead and two blue beads from Level 10 at Mmadipudi Hill

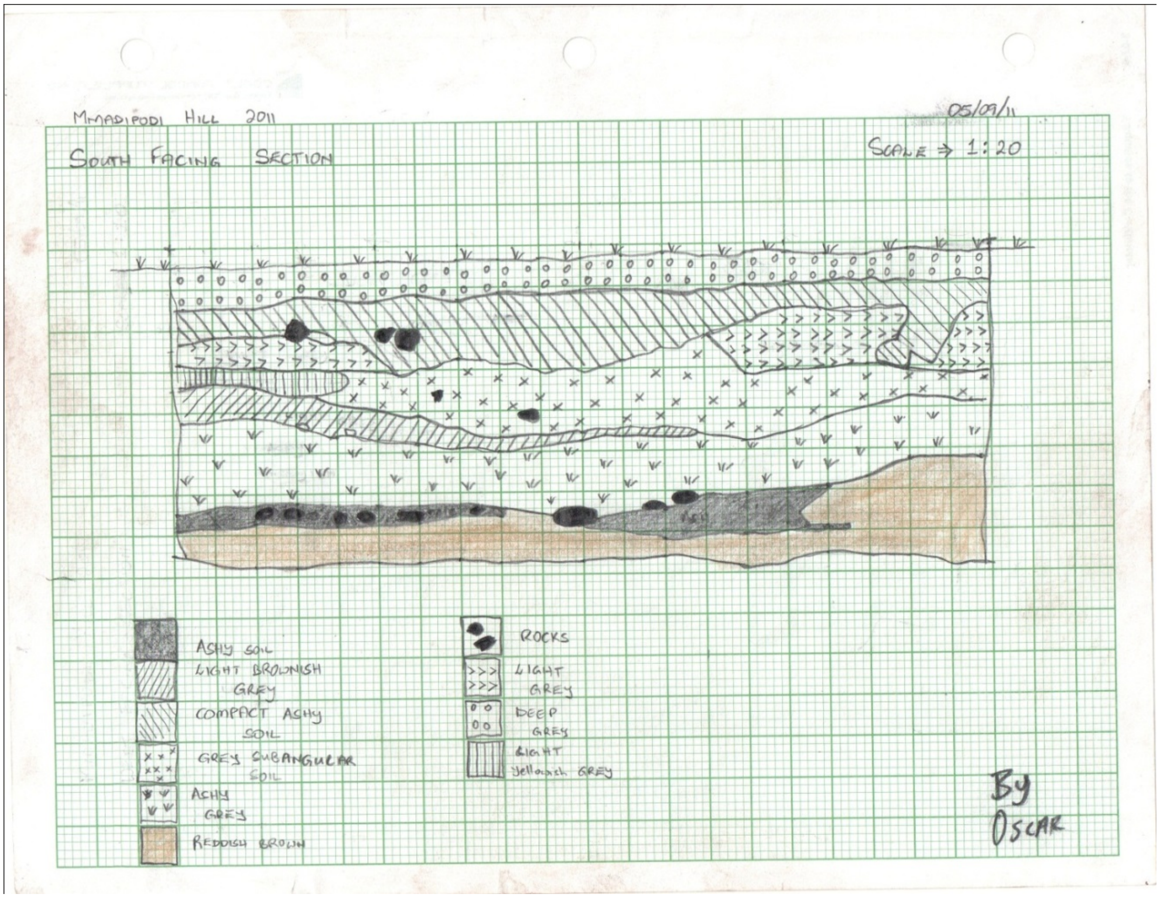


Figure 10.16: Profile sketch of Mmadipudi Hill, southern wall

Chapter 11

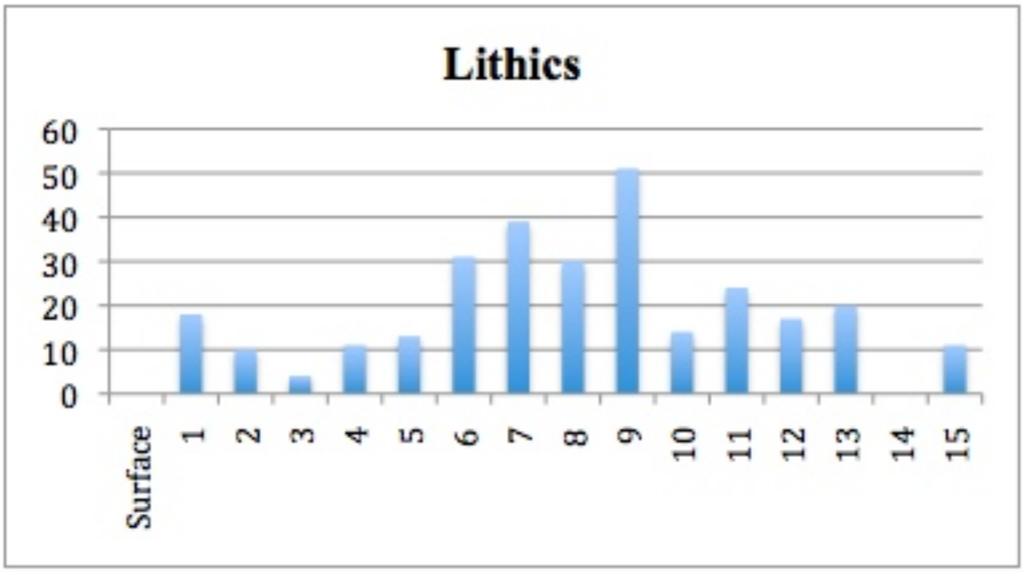


Figure 11.1: Lithic distribution by level, Mmadipudi Hill.

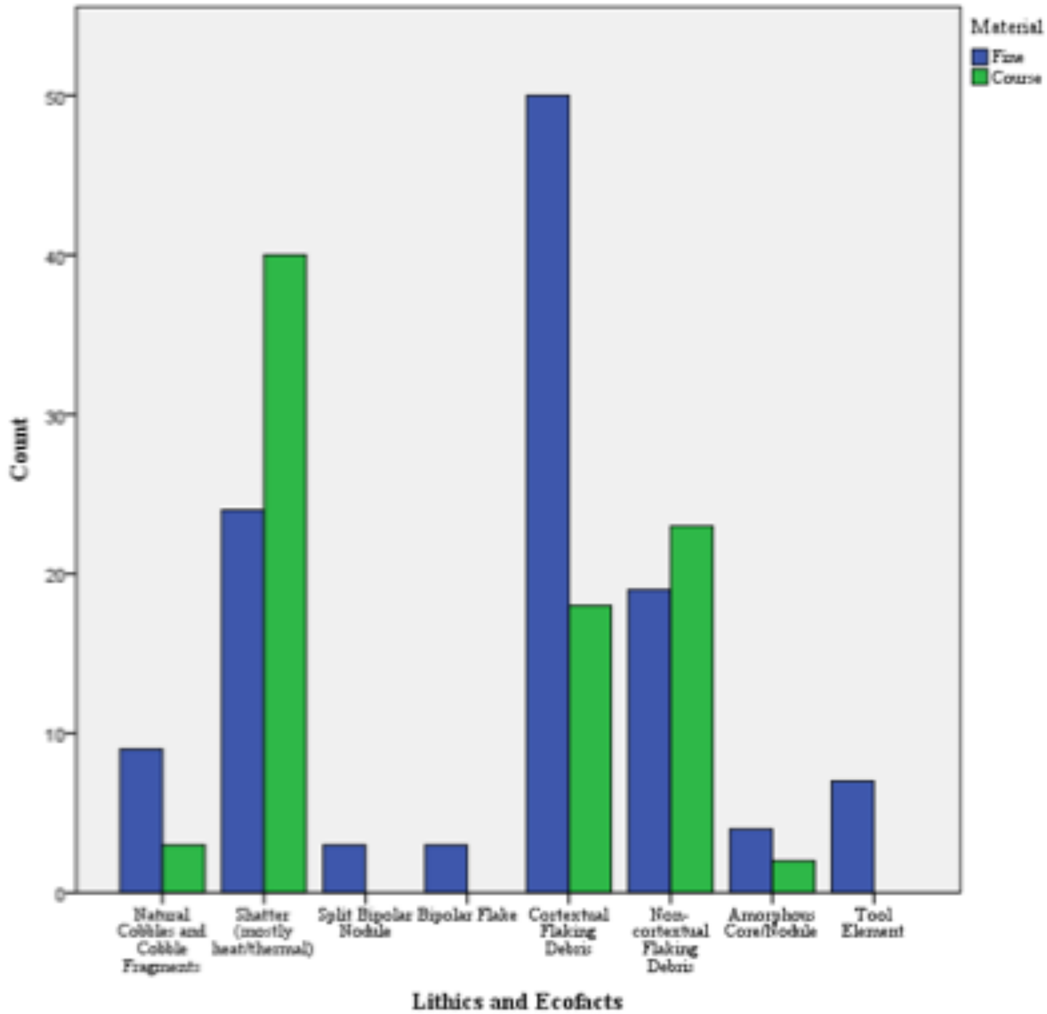


Figure 11.2: Lithic and ecofact counts by categories and materials, Mmadipudi Hill

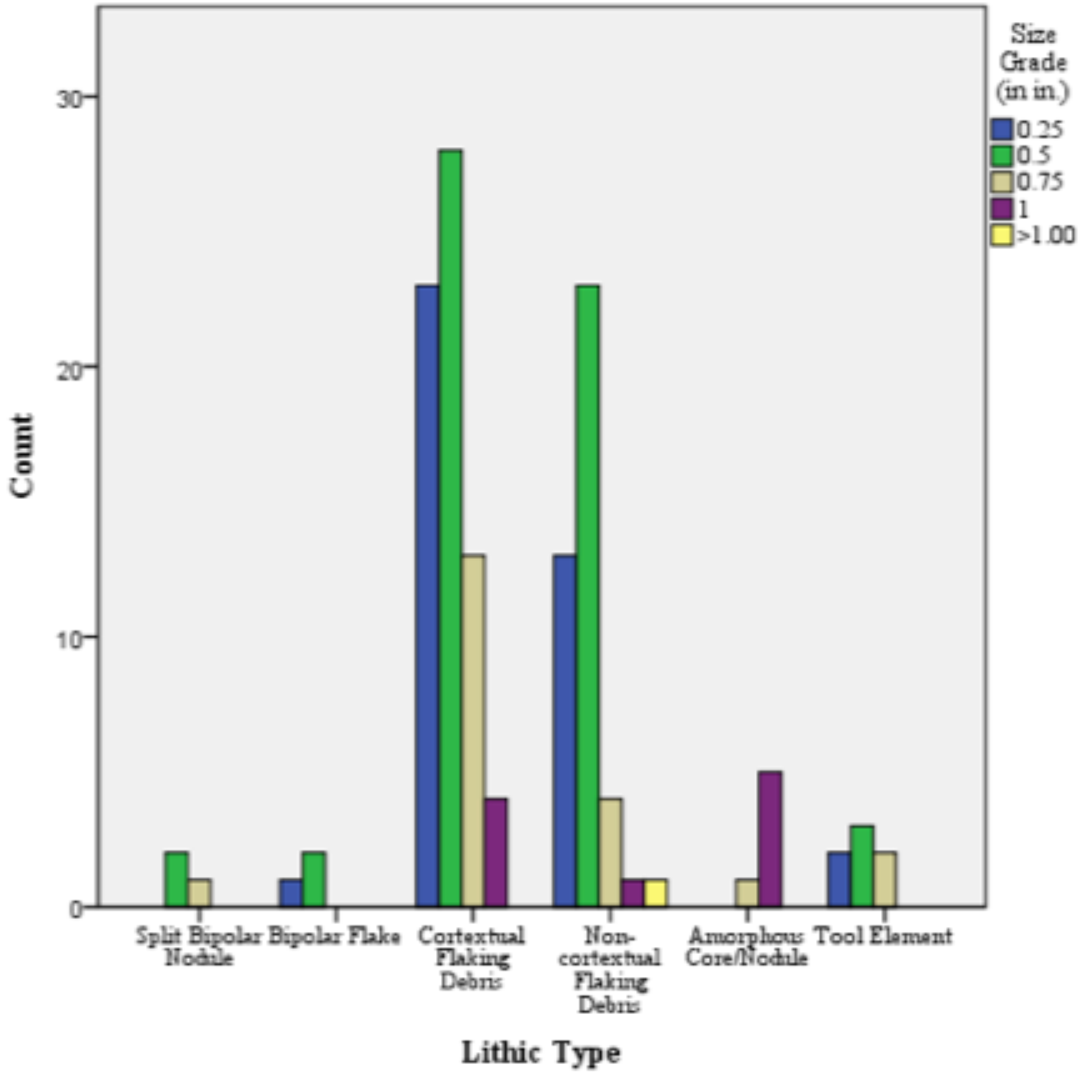


Figure 11.3: Lithic types by size, Mmadipudi Hill

TU or EU	Count
Unit 4	68
Unit 5	3
Unit 6	176
Unit 7	52
Unit 2W2	2
TU2	16
TU8	3
TU9	1
TU10	3

Table 11.1: Lithic and Ecofact Counts by excavation and test unit

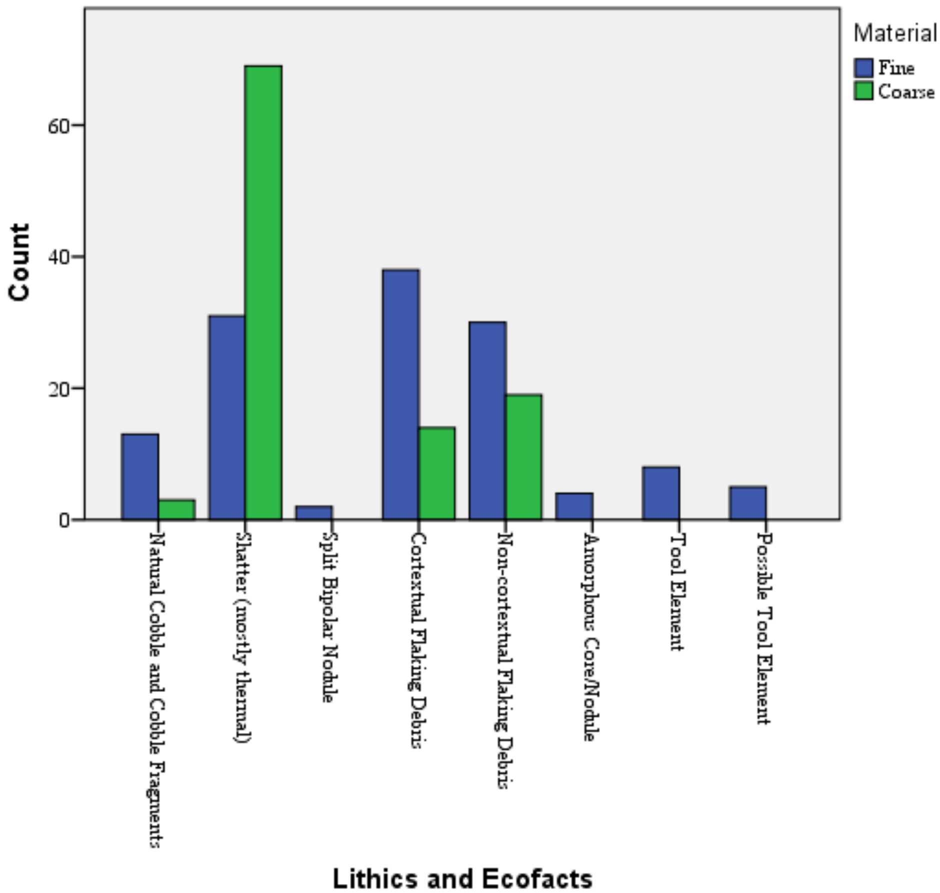


Figure 11.4: Lithic and ecofact counts by categories and materials, Khubu la Dintša

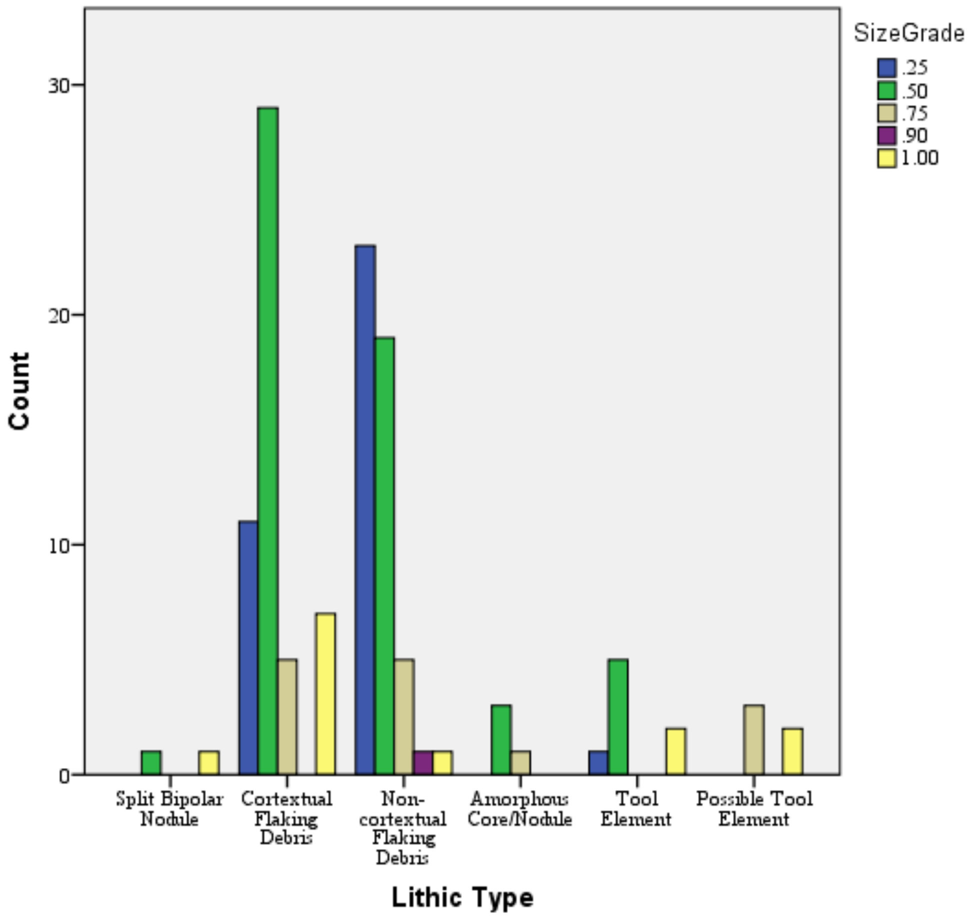


Figure 11.5: Lithic types by size, Khubu la Dintša

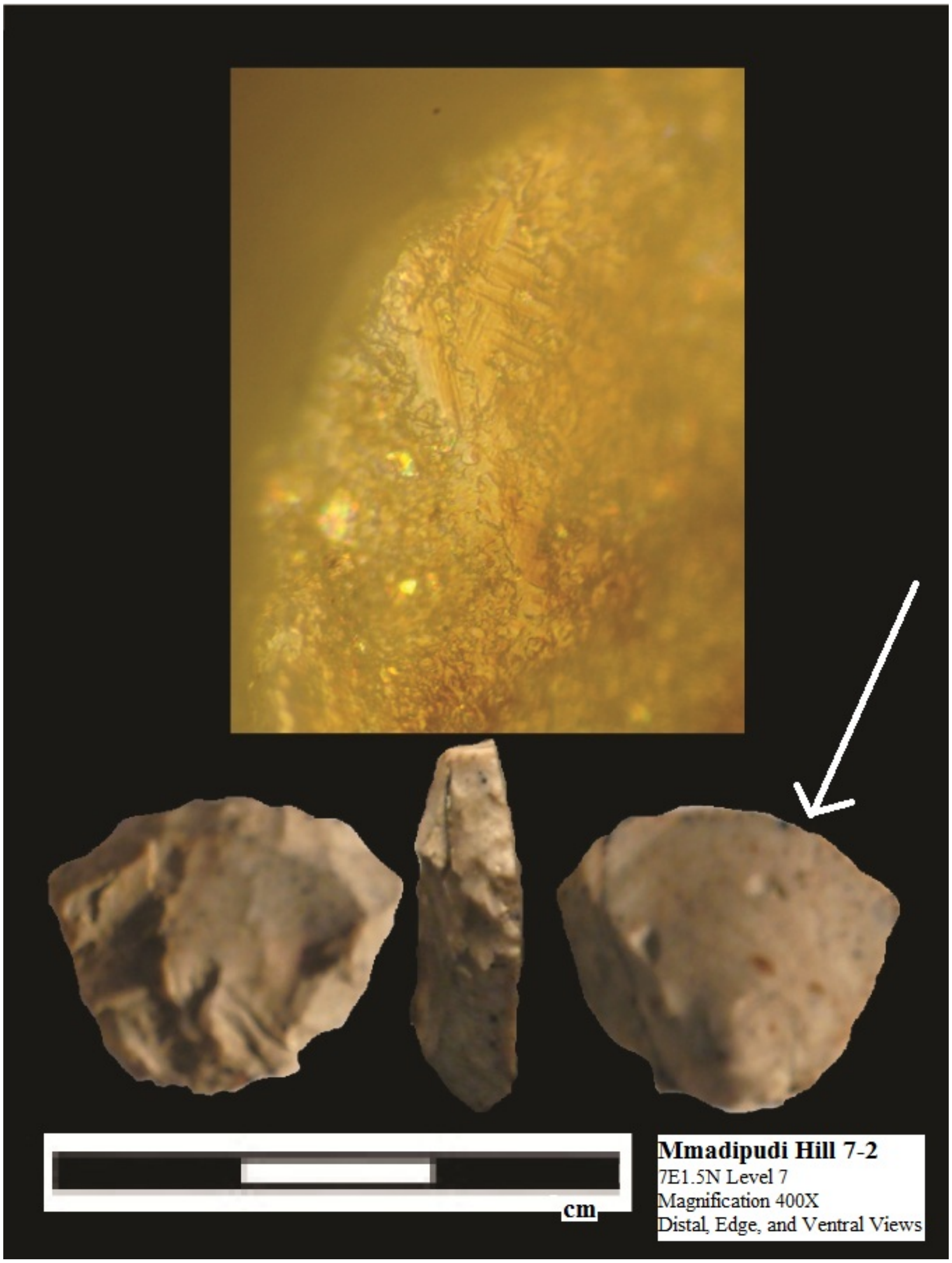


Figure 11.6: Microphotograph of Artifact 7-2 from Mmadipudi Hill

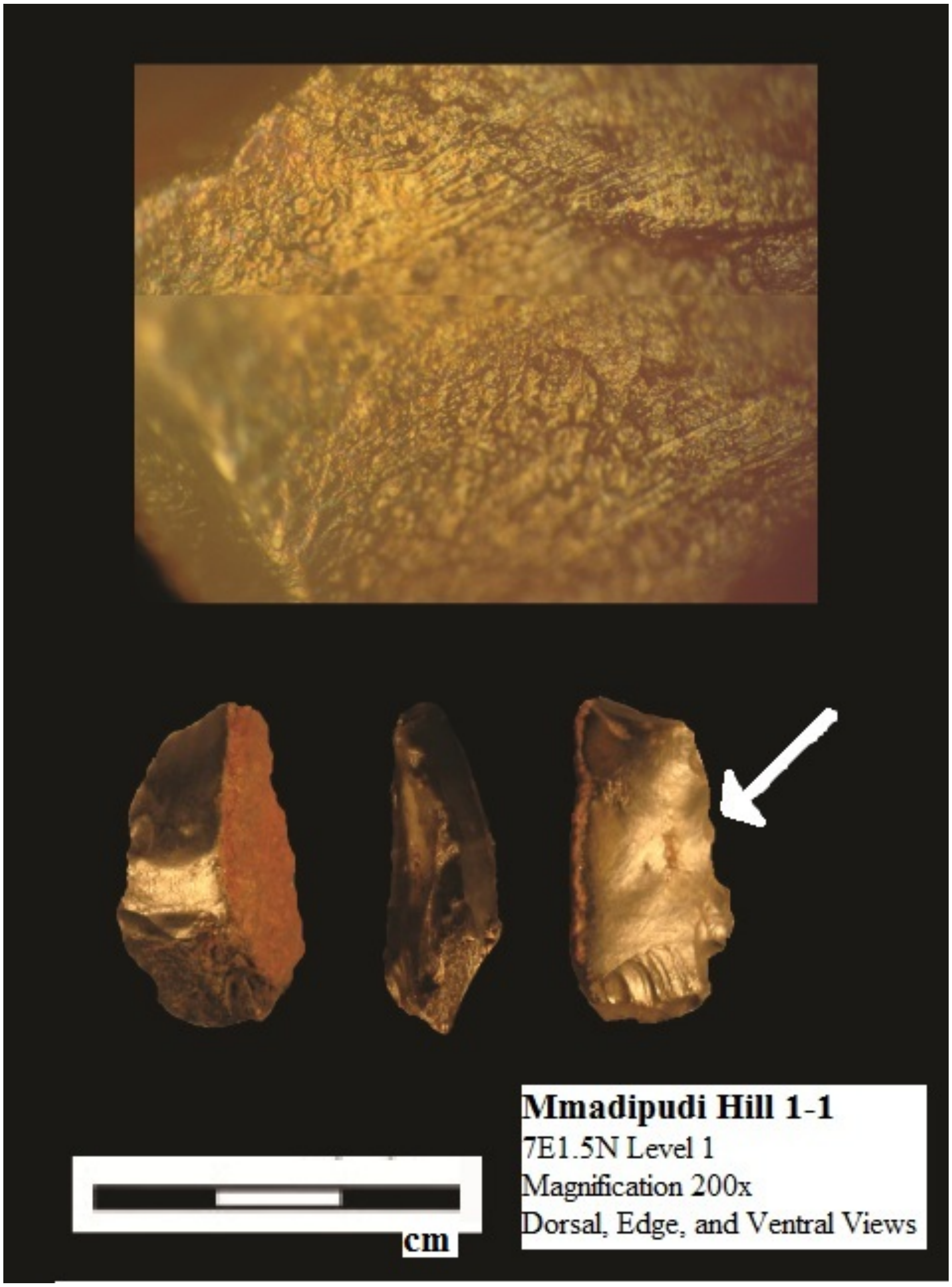


Figure 11.7: Microphotograph of Artifact 1-1 from Mmadipudi Hill

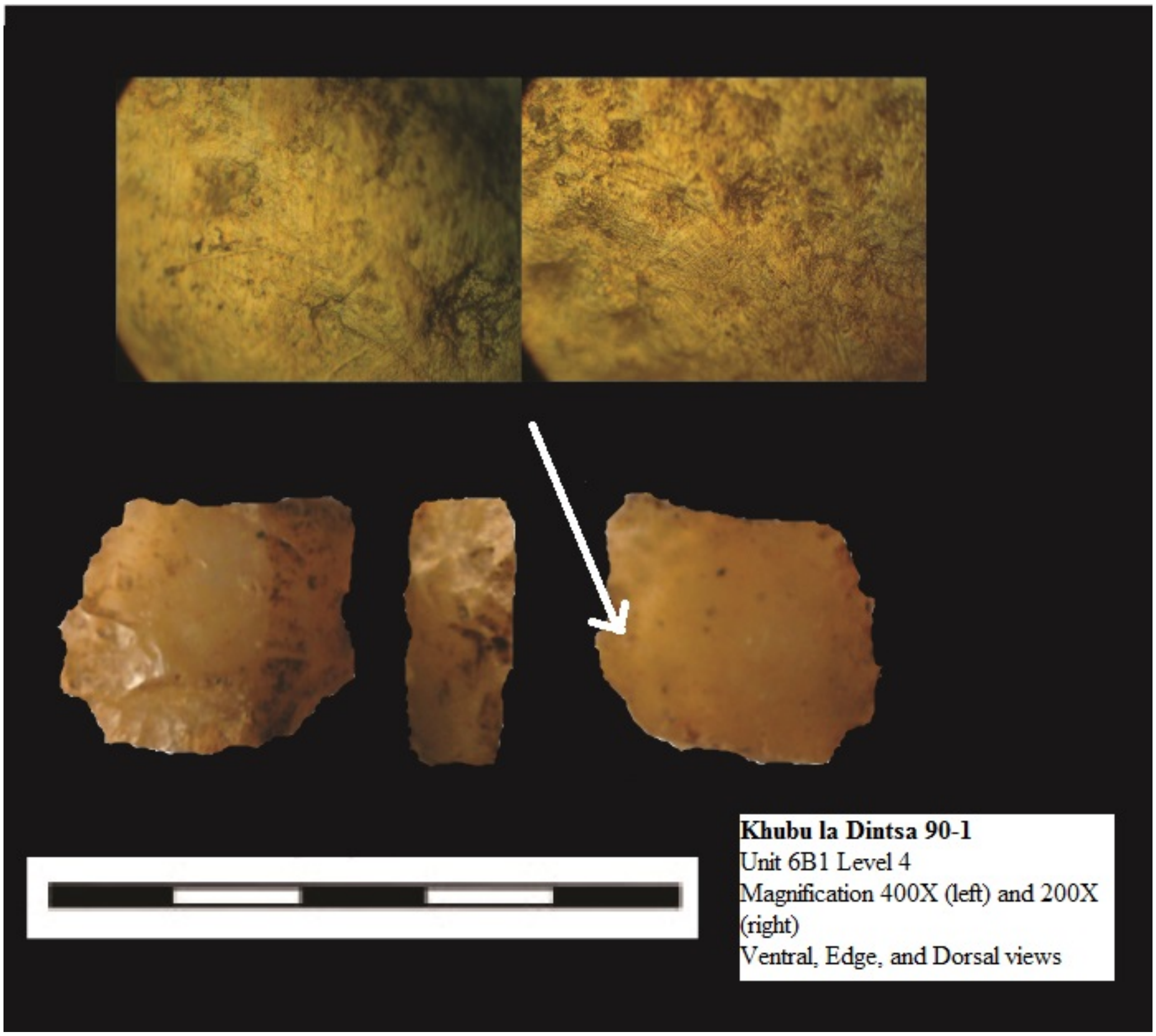


Figure 11.8: Microphotograph of Artifact 90-1 from Khubu la Dintša

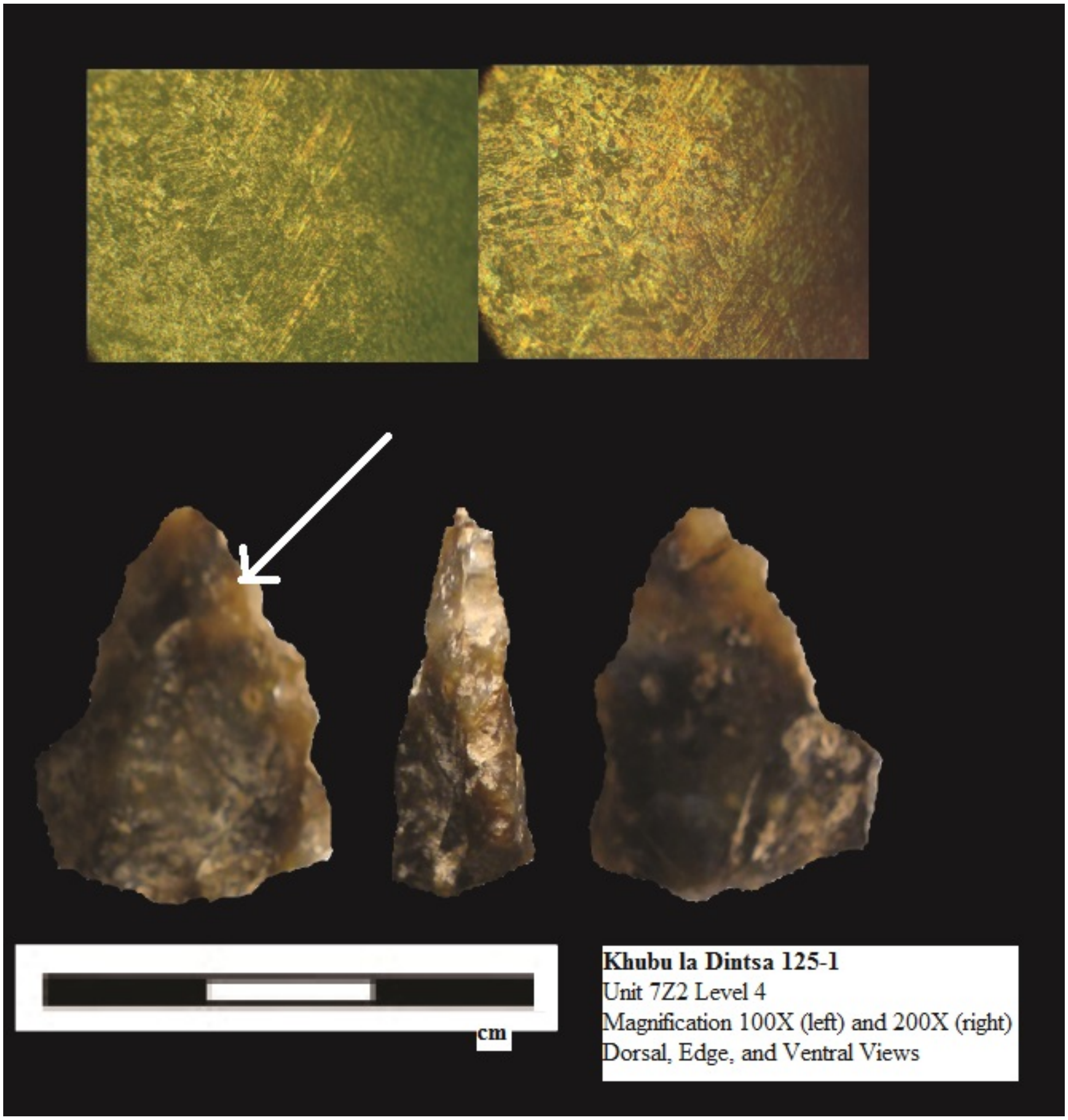


Figure 11.9: Microphotograph of Artifact 125-1 from Khubu la Dintša

Chapter 13

Figure 13.1: Ground site noted 1km from Bosutswe

Figure 13.2: Kraal from ground site is visible in black left area of the photo. Bosutswe is seen on the horizon.

Figure 13.3: Rodent disturbance noted at ground site. Ceramic sherds in foreground.

Figure 13.4: Carved tree at Khubu la Dintša relating to the *phekolo* ceremony

Figure 13.5: Entryway constructed for the *phekolo* ceremony. Photo credit: Dr. James Denbow.

Figure 13.6: Pathways made by the church followers. Photo credit: Dr. James Denbow.

Figure 13.7: Purification basins used in the *phekolo* ceremony. Photo credit: Dr. James Denbow.

Figure 13.8: Entrance to the *phekolo* ceremony, as of 2011

Figure 13.9: Pathways associated with the *phekolo* ceremony, as of 2011

Figure 13.10: Basins associated with the *phekolo* ceremony, as of 2011.

Bibliography

Allan, J.W. 1973. Abū'l Qāsim's treatise on ceramics. *Iran* 11:111-120.

Ames, Kenneth. 2007. The Archaeology of Rank. In *Handbook of Archaeological Theories*. R.A. Bentley, H.D.G. Maschner, and C. Chippendale, eds. Pp. 487-514. Lanham, Md.: Altamira Press.

Archer, S. 2002. Technology and ecology in the Karoo: a century of windmills, wire and changing farming practice. In *South Africa's environmental history: cases and comparisons*. S. Dovers, R. Edgecombe and B. Guest, B., eds. Pp. 112-138. David Philip, Cape Town.

Arnold, J. E., ed. 1996. *Emergent complexity: the evolution of intermediate societies*. International Monographs in Prehistory Archaeological Series 9. Ann Arbor, Mi.: University of Michigan Press.

Aschwanden, H. 1982. *Symbols of Life*. Harare, Zimbabwe: Mambo Press.

Atwood, Kirsten. 2005. The faunal assemblage from the 100W and 90W locations at Bosutswe. MA thesis, University of Texas at Austin, Austin, Texas.

Aukema, J. 1989. Rain-making: a thousand-year-old ritual. *South African Archaeological Bulletin* 44:70-72.

Beach, D.N. 1980. *The Shone and Zimbabwe 900-1850*. Gweru, Zimbabwe: Mambo Press.

Beinart, W. 1996. Soil erosion, animals and pasture over the long term: environmental destruction in South Africa. In *The lie of the land: challenging perceived wisdom on the African environment*. M. Leach and R. Mearns, eds. Pp. 54-72. Oxford: The International African Institute in association with James Currey.

Blanton, R. E. 1995. The cultural foundations of inequality in households. In *Foundations of social inequality*. T. Douglas Price and Gary M. Feinman, eds. Pp. 105-127. New York: Plenum Press.

Blanton, R. E., G. M. Feinman, S. A. Kowaleski, and P. N. Peregrine. 1996. A dual-processual theory for the evolution of Mesoamerican civilization. *Current Anthropology* 37:1-14.

Brain, C. 1974. Human food remains from the Iron Age at Zimbabwe. *South African Journal of Science* 70**:**303-309.

Brill, R. H. 1987. Chemical analysis of some early Indian classes. In *Archaeometry of Glass*. Ed. H.C. Bhardwaj. Pp. 1-25. Proceedings of the Archaeometry Session of the XIV International Congress on Glass 1986 New Dehli India. Calcutta: Indian Ceramic Society.

———. 1999. *Chemical Analyses of Early Glass Beads,* 2 volumes. Corning: The Corning Museum of Glass.

Brookes, A. and J. Yellen. 1977.Archaeological excavations at #Gi: a preliminary report on the first two seasons. *Botswana Notes and* Records 9:21-30.

Brumfiel, Elizabeth. 1994. Factional competition and political development in the New World: an introduction. In *Factional competition and political development in the New World*. Elizabeth Brumfiel and J. W. Fox, eds. Pp. 3-15. Cambridge: Cambridge University Press.

———. 1995. Heterarchy and the analysis of complex societies: comments. In *Heterarchy and the analysis of complex societies*. Robert M. Ehrenreich, Carole L. Crumley, and Janet E. Levy, eds. Pp. 125-131. *Archaeological Papers of the American Anthropological Association Number 6*. Arlington, Va.: American Anthropological Association.

Brumfiel, Elizabeth M. and Timothy Keene Earle, eds. 1987. *Specialization, exchange, and social complexity*. Cambridge: Cambridge University Press.

Burke, E.E. 1962. Some aspects of Arab contact with south east Africa. In *Historians in tropical Africa: Proceedings of the Leverhulme inter-collegiate history conference, August*. Salisbury, Rhodesia: University College of Rhodesia and Nyasaland, 93-106.

Calabrese, John A. 2000. Interregional Interaction in Southern Africa: Zhizo and Leopard's Kopje Relations in Northern South Africa, Southwestern Zimbabwe, and Eastern Botswana, AD 1000 to 1200. *African Archaeological Review* 17(4):183-208.

———. 2005. Metals, ideology and power: the manufacture and control of materialised ideology in the area of the Limpopo-Shashe confluence, c. CE 900 to 1300. PhD dissertation, University of Witwatersrand, Johannesburg, South Africa.

Campbell, A. C., C. Van Waarden, and G. Holmberg. 1996. Variation in the Early Iron Age of southeastern Botswana. Botswana Notes and Records 28: 1-22.

Carey, M. 1998.Gender in African Beadwork: An Overview. In *Beads and Bead Makers: Gender, Material Culture and Meaning*. J. B. Eicher and L .D. Sciama, eds. Pp. 83-93. Oxford: Berg.

Chami, Felix A. 1994. A review of Swahili archaeology. *African Archaeological Review* 15(3):199-218.

Chapman, Robert W. 2003. *Archaeologies of complexity*. London: Routledge.

Connah, G., ed. 1998. *Transformations in Africa: Essays of Africa's later past*. London: Leicester University Press.

Conyers, L. B., E. G. Ernenwein, M. Grealy and K. M. Lowe. 2008. Electromagnetic Conductivity Mapping for Site Prediction in Meandering River Floodplains. *Archaeological Prospection* 15(2):81-91.

Cooke, C. K. 1979. Stone Age in Botswana: preliminary survey. *Arnoldia* 8:1-32.

Costin, Catherine L. 1991. Craft specialization: issues in defining, documenting, and explaining the organization of production. *Journal of Archaeological Method and Theory* 3:1-56.

———. 2001. Production and exchange of ceramics. In *Empire and domestic economy*, Terrence D'Altroy and Christine Hastorf, eds. Pp. 203-42. New York: Plenum Press.

Costin, Cathy Lynne and Timothy Keene Earle. 1989. Status distinction and legitimation of power as reflected in changing patterns of consumption in late prehispanic Peru. *American Antiquity* 54:691-714.

Crumley, Carole L. 1987. A dialectical critique of hierarchy. In *Power relations and state formation*. T.C. Patterson and C.W. Gailey, eds. Pp. 155-159. Washington, DC: American Anthropological Association.

———. 1994. The ecology of conquest: contrasting agropastoral and agricultural societies' adaptation to climate change. In *Historical ecology: cultural knowledge and changing landscapes*. Carole L. Crumley, ed. Pp. 183-201. Santa Fe, NM: School of American Research Press.

———. 1995. Heterarchy and the analysis of complex societies. In *Heterarchy and the analysis of complex societies*. Robert M. Ehrenreich, Carole L. Crumley, and Janet E. Levy, eds. Pp. 1-6. Archaeological Papers of the American Anthropological Association Number 6. Arlington: American Anthropological Association.

D'Altroy, Terrence and Timothy Keene Earle. 1985. "Staple Finance, Wealth Finance, and Storage in the Inka Political Economy." *Current Anthropology* 26(2):187-206.

Dahlberg, A. C. 1996. Interpretations of environmental change and diversity. A study from the North East District, Botswana. PhD dissertation, Stockholm University, Stockholm, Sweden.

Dalan, Rinita A. 2006. Magnetic Susceptibility. In *Remote sensing in archaeology: an explicitly North America perspective*. Ed. Jay K. Johnson. Pp. 161-204. Tuscaloosa: University of Alabama Press.

Dalan, R. A. and S. K. Banerjee. 1998. Solving archaeological problems using techniques of soil magnetism. *Geoarchaeology* 13:3-36.

Dart, R. A. 1959. Forward. In *The Skeletal Remains of Bambandyanolo:xiii-xxii*. A. Galloway, ed. Johannesburg: University of Witwatersrand Press.

Dearing, J. A., K. L. Hay, S. M. J. Baban, A. S. Hudleston, E. M. H. Wellington, and P. J. Loveland. 1996. Magnetic susceptibility of soil: an evaluation of conflicting theories using a national data set. *Geophysical Journal International* 127:728-734.

Diehl, M. W., ed. 2000. *Hierarchies in action: cui bono?* Center for Archaeological Investigations, Occasional Paper no. 27. Carbondale: Southern Illinois University.

Dietler, Michael. 1995. The cup of Gyptis: rethinking the colonial encounter in Early Iron Age Western Europe and the relevance of world-systems models. *Journal of European Archaeology* 3:89-111.

Deacon, J. 1984. The southern Africa Later Stone Age and the development of human behavior. In *Southern African paleoenvironments and prehistory*. Richard Klein, ed. Pp. 221-238. Rotterdam, Germany: Balkema.

De Maret, P. 1985. The smith's myth and the origins of leadership in Central Africa. In *African Iron Working*. R. Haaland, R. and P. Shinnie, P., eds. Pp. 73-87. Oslo, Norway: Norwegian University Press.

———.1994. Archaeological and other prehistoric evidence of traditional African religious expression. In *Religion in Africa: experience and expression*. T. Blakely, W. Van Beek, and T. Thompson, eds. Pp. 183-196. London: J. Currey.

Denbow, James R. 1979. Cenchrus ciliarus: an ecological indicator of Iron Age middens using aerial photography in eastern Botswana. *South African Journal of Science* 75:405-408.

———. 1982. The Toutswe tradition: a study in socioeconomic change. In *Settlement in Botswana*. R. Hitchcock and M. Smith, M., eds. Pp. 73-86. Johannesburg, South Africa: Heinemann.

———. 1983. Iron Age economics: herding, wealth, and politics along the fringes of the Kalahari Desert during the Early Iron Age. PhD dissertation, Indiana University, Bloomington, Indiana.

———. 1984. Cows and Kings: a spatial and economic analysis of a hierarchical Early Iron Age settlement system in Eastern Botswana. In M. Hall, G. Avery, D.M. Avery, M.L. Wilson, and A.J.B. Humphreys (eds.) *Frontiers: Southern African ArchaeologytToday,* pp. 24-30. Oxford: B.A.R. International Series 207.

———. 1985. Report on archaeological investigations at Sowa Pan. Unpublished report commissioned by British Petroleum.

———. 1986. A new look at the later prehistory of the Kalahari. *Journal of African History* 27:3-28.

———. 1990. Congo to Kalahari: data and hypotheses about the political economy of the western stream of the Early Iron Age. *African Archaeological Review* 8: 139-175.

———. 1991. Review of Iron Age migrations. *South African Archaeological Bulletin* 46:151-152.

———. 1999. Material culture and the dialectics of identity in the Kalahari: CE 700-1700. In *Beyond chiefdoms: Pathways to complexity in Africa*. Susan K. McIntosh, ed. Pp. 110–123. Cambridge: Cambridge University Press.

———. 2002. Stolen places: archaeology and the politics of identity in the later prehistory of the Kalahari. In *Africanizing Knowledge: African Studies across the disciplines*. T. Falola and C. Jennings, eds. Rutgers, NJ: Transaction Publishers.

Denbow, James R. and Alec C. Campbell. 1980. National Museums of Botswana: archaeological review programme. *Nyame Akuma* November: 3-9.

Denbow, James R. and Duncan Miller. 2007. Metal working at Bosutswe, Botswana. *Journal of African Archaeology* 5:271-313.

Denbow, James and Morongwa Mosothwane. 2008. Finding Bosutswe: archaeological encounters with the past. *History in Africa* 35:145-190.

Denbow, James R., Morongwa Mosothwane, and N.M. Ndobochani. 2009. Everybody here is all mixed up: postcolonial encounters with the past at Bosutswe, Botswana. *In Postcolonial Archaeologies in Africa*. Peter R. Schmidt, ed. Santa Fe, NM: School for Advances Research Press.

Denbow James R. and Edwin Wilmsen. 1986. The advent and course of pastoralism in the Kalahari. *Science* 234:1509-1515.

Denbow, James R., Jeanette Smith, N. Ndobochani, Kirsten Atwood, and Duncan Miller. 2008. Archaeological excavations at Bosutswe, Botswana: Cultural chronology, paleo-ecology and economy. *Journal of Archaeological Science* 35:459-480.

Drennan, Robert D., Christian E. Peterson, Jake R. and Fox. 2010. Degrees and kinds of inequality. In *Pathways to power: new perspectives on the emergence of social inequality*. T. Douglas Price and Gary M. Feinman, eds. Pp. 45-76. New York: Springer.

Dubroc, Beau. 2010. The Beads of Bosutswe. MA thesis, University of Texas at Austin, Austin, TX.

Du Piesanie, J. 2008. Understanding the socio-political status of Leokwe society during the Middle Iron Age in the Shashe-Limpopo Basin through a landscape approach. MA thesis, University of Witwatersrand, Johannesburg, South Africa

Dussubieux, Laure. 2001. L'apport de l'ablaiton couplee a la characterization der verres: application a l'etude du verre archeologique de l'Ocean Indien. PhD thesis, Universite d'Orleans, Orleans, France.

Dussubieux, Laure and B. Gratuze. 2003. Non-destructive characterization of glass beads: an application to the study of glass trade between Indian and Southeast

Asia. In *Fishbones and Glittering Emblems: Southeast Asian Archaeology 2002*. A. Karlstrom and A. Kallen, A., eds. Pp. 1035-148. Stockholm, Sweden: Museum of Far Eastern Antiquities.

Dussubieux, Laure, Chapurukha M. Kusimba, V. Gogte, Sibel B. Kusimba, B. Gratuze, and Rahul Oka. 2008. The trading of ancient glass beads: new analytical data from South Asian and East African soda-alumina glass beads. *Archaeometry*, 50(5):797–821.

Dussubieux, Laure, Peter Robertshaw, and Michael D. Glascock. 2009. LA-ICP-MS analysis of African glass beads: laboratory inter-comparison with an emphasis on the impact of corrosion on data interpretation. *International Journal of Mass Spectrometry*. 284:152-161.

Earle, Timothy K. 1978. *Economic and social organization of a complex chiefdom: the Halelea District, Kaua''i, Hawaii*. Anthropological Paper, No. 63. Ann Arbor: The University of Michigan Museum of Anthropology.

———. 1982. The ecology and politics of primitive valuables. In *Cultural Ecology*. J. Kennedy and R. Edgerton, eds. Pp. 65-83. Washington, D.C.: American Anthropological Association.

———. 1991. Paths and roads in evolutionary perspective. In *Ancient Road Networks and Settlement Hierarchies*, C. Trombold, ed. Pp. 10-16. Cambridge: Cambridge University Press.

———. 1997. *How chiefs come to power*. Stanford, CA: Stanford University Press.

———. 2002. *Bronze Age Economics*. Cambridge: Westview Press.

Ehrenreich, R.M., Crumley, C.L., and J.E. Fox, eds. 1995. *Heterarchy and the analysis of complex societies*. Archaeological Papers of the American Anthropological Association Number 6. Arlington: American Anthropological Association.

Ekblom, A. 2004. Changing landscapes and environmental history of Chibuene southern Mozambique, AD 500-present. PhD dissertation, Uppsala University, Uppsala, Sweden.

Ekholm, K. 1972. Power and prestige: The rise and fall of the Kongo kingdom. Uppsala: Scriv Service.

Eloff, J.F. and Meyer, A. 1981. The Greefswald sites. In *Guide to archaeological sites in the northern and eastern Transvaal*, 7-22. Ed. E. A. Voigt. Pretoria: Transvaal Musuem.

Emerson, Thomas E. 1997. *Cahokia and the archaeology of power*. Tuscaloosa: The University of Alabama Press.

Ernenwein, Eileen G. 2008. A geophysical view of Pueblo Escondido: implications for the Pithouse to Pueblo Transition in the Jornada Mogollon. *Bulletin of the Texas Archaeological Society* 79:125-145.

Ernenwein, Eileen G. and M. L. Koons. 2007. Subsurface Imaging in Tiwanaku's Monumental Core. Paper presented at the Technology and Archaeology Workshop, Dumbarton Oaks.

Evans, M. E. and Heller, F. 2003. Environmental magnetism: principles and applications of enviromagnetics. New York: Academic Press.

Evers, T. M. and Hammond-Tooke, D. 1986. The emergence of South African chiefdoms: an archaeological perspective. *African Studies* 45:37-42.

Fabian, Johannes. 1983. *Time and the Other: how anthropology makes its object*. New York: Columbia University Press.

Fagan, B.M. 1961. Pre-European ironworking in Central Africa with special reference to Northern Rhodesia. *Journal of African History* 11:199-210.

———. 2011. *Ancient lives: an introduction to archaeology and prehistory*. Fifth edition. Pearson Pubishing.

Feinman, Gary M. and Joyce Marcus, eds. 1998. *Archaic states*. Advances Seminar Series. Santa Fe, NM: School of Advanced Research Press.

Feinman, Gary M., Kent G. Lightfoot, Kent G., and Steadman Upham. 2000. Political hierarchies and organizational strategies in the Puebloan Southwest. *American Antiquity* 65:449-470.

Flannery, Kent V. 1972. The cultural evolution of civilizations. *Annual Review of Ecology and Systematics* 3:399-426.

Fouché, L., ed. 1937. *Mapungubwe: ancient Bantu civilization on the Limpopo*. London: Cambridge University Press.

Freeman-Grenville, G. S. P. 1962. *The east African coast: selected documents from the first to the earlier nineteenth centuries*. Oxford: Clarendon Press.

Friedman, J., and Michael J. Rowlands. 1977. Notes toward an epigenetic model of the evolution of "civilization." In *The evolution of social systems*. Jonathan Friedman and Michael J. Rowlands, eds. Pp. 201-78. London: Duckworth.

Gaie, Joseph B. R. and Sana Koketso Mmolai. 2007. *The concept of botho and HIV/AIDS in Botswana*. Eldoret, Kenya: Zapf Chancery Research Consultants and Publishers.

Galloway, A. 1937. The Skeletal Remains of Mapungubwe. In: Fouché, L. (ed.) Mapungubwe: ancient Bantu civilisation on the Limpopo:127-174. London: Cambridge University Press.

Gardner, G. 1955. Mapungubwe, 1935-1940. *South African Archaeological Bulletin* 10(39):73-77.

———. 1956. Points from Correspondence. Mapungubwe and Bambandyanalo. Reply to Walton. South African Archaeological Bulletin 11(42):55-56.

———. 1958. Mapungubwe and the second volume. *South African Archaeological Bulletin* 13(52):123-132.

———. 1963. *Mapungubwe, Volume II*. Pretoria, South Africa: J.L. Van Schaik, Ltd.

Garlake, P. S. 1966. Iron Age archaeology. In *Shashe Expedition*. Pp. 19-22. Bulawayo, Zimbabwe: Rhodesian Schools Exploratory Society.

———. 1967. Iron Age archaeology. In *17th* Expedition: Maramani. Pp. 22-25. Bulawayo, Zimbabwe: Rhodesian Schools Exploratory Society.

———. 1968. Test excavations at Mapela Hill, near the Shashi River, Rhodesia.

———. 1973. *Great Zimbabwe*. London: Thames and Hudson.

Gifford-Gonzalez, D. 2000. Animal disease challenges to the emergence of pastoralism in sub-Saharan Africa. *African Archaeological Review* 17 (3):95-139.

Gledhill, J., Bender, B., and Larsen, M. T. 1985. *State and society:the emergence and development of social hierarchy and political centralization*. One World Archaeology Series No. 4. London: Routledge.

Gramcsi, A. 1971. *Selections from the Prison Notebooks*. Q. Hoare and G.N. Smith, eds. trans. London: Wishart.

Gratuze, B. 1999. Obsidian characterization by laser ablation ICP-MS and its application to prehistoric trade in the Mediterranean and the Near East: Sources and distribution within the Aegean and Anatolia. *Journal of Archaeological Science*. 26: 869-881.

Green, D. 1966. *The Karroo system in Bechuanaland*. Geological Survey Department, Lobatse.

Greene, K. and T. Moore. 2010. *Archaeology: an introduction*. New York: Routledge.

Gregg, S. 1991. *Between Bands and States*. Occasional Paper no. 9, Center for Archaeological Investigations. Carbondale, Illinois: Southern Illinois University.

Guyer, J. I. 1995. Wealth in people, wealth in things – introduction. *Journal of African History* 36:83-90.

Guyer, J. I. and S. M. E. Belinga. 1995. Wealth in people as wealth in knowledge: Accumulation and composition in equatorial Africa. *Journal of African History* 36:91-120.

Hall, Martin. 1987. *Farmers, kings, and traders: the people of southern Africa 200-1860*. Chicago: University of Chicago Press.

Hall, Martin. 1993. The archaeology of colonial settlement in southern Africa. *Annual Review of Anthropology* 22:177-200.

Hall, Martin and A. Markell, eds. 1993. *Historical archaeology in the Western Cape*. South African Archaeological Society Goodwin Series 7.

Halperin, C. T., and A. E. Foias. 2010. Pottery Politics: Late Classic Maya Palace Production at Motul de San José, Petén, Guatemala. *Journal of Anthropological Archaeology* 29(3):392-411.

Hammond-Tooke, D. 1986. The aetiology of spirit in southern Africa. *African Studies* 45:157-170.

Handler, J. S. 2007. From Cambay in India to Barbados in the Caribbean: two unique beads from Newton Plantation Slave Cemetary. *African Diaspora Archaeology Newsletter*. March. http://www.diaspora.uiuc.edu/news0307/news0307.html#1.

Handler, J. S. and F.W. Lange. 1979. Plantation Slavery on Barbados, West Indies. *Archaeology* 32: 45-52.

Handler, J. S. and R. S. Corruccini. 1982. Report on a Physical Anthropological Analysis of a Barbados Slave Population. *Newsletter of the Caribbean Studies Association* 9:7-8.

Hanisch, E. O. M. 1980. An archaeological interpretation of certain Iron Age sites in the Limpopo/Shashi Valley. MA thesis, University of Pretoria, Pretoria, South Africa.

Hastorf, Christine. One path to the heights: negotiating political inequality in the Sausa of Peru. In *The evolution of political systems*. Steadman Upham, ed. Pp. 146-176. Cambridge: Cambridge University Press.

Henderson, Julian. 1998. Blue and other coloured translucent glass decorated with enamels: possible evidence for trade in cobalt-blue colourants. In *Gilded and Enameled Glass from the Middle East*. R. Ward, ed. Pp. 116-121. London: British Museum Press.

———.2013. *Ancient glass: an interdisciplinary exploration*. Cambridge: Cambridge University Press.

Hendrickson, A. 1986. Early Iron Age ceramics from northwestern Botswana: evidence from Matlapaneng, Nqoma, and Divuyu. MA thesis, New York University, New York.

Helldén, U. 1991. Desertification: time for an assessment? *Ambio* 20:372-383.

Hennenberg, M. and M. Steyn. 1994. A preliminary report on the palaeodemography of K2 and Mapungubwe populations. *Human Biology* 66(1):105-120.

———.1995. Trends in mortality and health status in South Africa over the last thousand years and their implications for the opportunity for natural selection. *Homo* 46(1):27-37.

Herbert, Eugene. 1984. *Red gold of Africa: copper in precolonial history and culture*. Madison: University of Wisconsin Press.

———.1993. *Iron, Gender and Power: rituals of transformation in African societies*. Bloomington: Indiana University Press.

———.1996. Metals and power at Great Zimbabwe. In *Aspects of African Archaeology*. G. Pwiti and R. Soper, eds. Pp. 641-647. Harare, Zimbabwe: University of Zimbabwe Publications.

Hitchcock, R. K. 1979. A socio-economic survey of eastern Kalahari cattle posts. *Botswana Notes and Records* 11:137-139.

Hoffman, T. and A. Ashwell. 2001. *Nature divided: land degradation in South Africa*. Cape Town: University of Cape Town Press.

Holmgren, K., W. Karen, S. E. Lauritzen, J. A. Lee-Thorpe, T. C. Partridge, S. Piketh, P. Repiniski, C. Stevenson, O. Savannered, and P.D. Tyson. 1999. A 3000-year high-resolution record of paleoclimate for north-eastern South Africa. *The Holocene* 9: 295-309.

Horton, M. and Middleton, J. 2000. *The Swahili: the social landscape of a mercantile society*. The Peoples of Africa series. Oxford: Blackwell.

Huffman, Thomas N. 1971. A guide to the Iron Age of Mashonaland. *Occasional Papers of the National Museum of Rhodesia* 4(1A):20-44.

———. 1972. The rise and fall of Zimbabwe. *Journal of African History* 13(3):353-366.

———. 1973. Test excavations at Makuru, Rhodesia. *Arnoldia* 5(39):1-21.

———. 1974. *The Leopard's Kopje tradition*. Museum Memoir 6. Salisbury, Rhodesia: National Museum and Monuments of Rhodesia.

———. 1978. The origins of Leopard's Kopje: an 11th century *difaqane*. *Arnoldia* 7**:**1-12.

———. 1980. Ceramics, classification, and Iron Age entities. *African Studies* 39(2):123-174.

———. 1982. Archaeology and ethnohistory of the African Iron Age. *Annual Review of Anthropology* 11:133-150.

———. 1984a. Leopard's Kopje and the nature of the Iron Age in Bantu Africa. *Zimbabwea* 1:28-35.

———. 1984b. Expressive space in the Zimbabwe culture. *Man* 19:593-612.

———. 1986a. Iron Age settlement patterns and the origins of class distinction in southern Africa. *Advances in World Archaeology 5*. F. Wendorf and E. Close, eds. Pp. 291- 338. New York: Academic Press.

———. 1986b. Archaeological evidence and conventional explanations of southern Bantu settlement patterns. *Africa* 56**:**280-298.

———. 1986c. Cognitive studies of the Iron Age in southern Africa. *World Archaeology* 18(1):84-95.

———. 1989. Ceramics, settlements, and Late Iron Age migrations. *African Archaeological Review* 7:155-182.

———. 1994. Toteng pottery and the origins of Bambata. *Southern African Field Archaeology* 33:55-60.

———.1996a. *Snakes and crocodiles: Power and symbolism in ancient Zimbabwe*. Johannesburg: Witwatersrand University Press.

———. 1996b. Archaeological evidence for climatic change during the last 2000 years in southern Africa. *Quaternary International* 33:55-60.

———. 2000. Mapungubwe and the origins of the Zimbabwe culture. *African Naissance: The Limpopo Valley 1000 Years Ago*. Goodwin Series, Vol. 8. M. Leslie and T. Maggs, eds. Pp. 14-29. Vlaeberg, South Africa: South African Archaeological Society.

———. 2001. The Central Cattle Pattern and interpreting the past. *Southern African Humanities* 13: 19-35.

———.2003. Archaeological mitigation of the Letsibogo Dam: agropastoralism in southeastern Botswana. *Southern African Field Archaeology* 11-12:4–63.

———. 2007. *Handbook to the Iron Age: The archaeology of pre-colonial farming societies in southern Africa*. Scottsville, South Africa: University of KwaZulu-Natal Press.

———. 2009. Mapungubwe and Great Zimbabwe: the origin and spread of social complexity in southern Africa. *Journal of Anthropological Archaeology* 28:37-54.

———. 2010. State formation in southern Africa: a reply to Kim and Kusimba. *African Archaeological Review* 27:1-11.

Huffman, Thomas N. and J. C. Vogel. 1991. The chronology of Great Zimbabwe. *South African Archaeological Bulletin* 46:61-70.

Johnson, A. W. and T. K. Earle. 1987. *The evolution of human societies: from foraging group to agrarian state*. Stanford, Ca.: Stanford University Press.

Jones, N. 1937. The 1934 Expedition. In *Mapungubwe: ancient Bantu civilization on the Limpopo*. L. Fouché, ed. Pp. 9-28. London: Cambridge University Press.

Joyce, Arthur A., Laura A. Bustamante, and Marc N. Levine. 2001. Commoner power: a case study from the Classic period collapse on the Oaxaca Coast. *Journal of Archaeological Method and Theory* 8:343-385.

Kelly, Kenneth. 2010. Arenas of Action: trade as power, trade as identity. In *Social Archaeologies of Trade and Exchange: Exploring relationships among people, places, and things*. A.A. Bauer and A.S. Agbe-Davis, eds. Pp. 99-117. Walnut Creek, Ca.: Left Coast Press.

Kent, Susan, ed. 2002. *Ethnicity, hunter-gatherers and the "Other:" association or assimilation in Africa*. Washington, D.C.: Smithsonian Institute Press.

Killick, David. 2009. Agency, dependency, and long-distance trade: East Africa and the Islamic world, ca. 700-1500 ce. In *Polities and power: Archaeological perspectives on the landscapes of early states*. Steven E. Falconer and Charles L. Redman, eds. Pp. 179-207. Tucson: University of Arizona Press.

Kim, N. C. and C. M. Kusimba. 2008. Pathways to social complexity and state formation in the southern Zambezian region. *African Archaeological Review* 25:37-54.

Kiyaga-Mulindwa, D. 1990. Excavation at Lose Enclosure, Central Botswana. In *Urban Origins in Eastern Africa: proceedings of the 1989 workshop at Great Zimbabwe*. P. Sinclair, P. and G. Pwiti, eds. Pp. 48-59. Stockholm, Sweden: The Central Board of National Antiquities.

———. 1992. Iron-working at Makodu in eastern Botswana. In *Urban Origins in Eastern Africa: proceedings of the 1991 workshop in Zanzibar*. P. Sinclair and A. Juma, eds. Pp. 162-166. Stockholm, Sweden: The Central Board of National Antiquities.

Kleinmann, B. 1991. Cobalt-pigments in the early Islamic blue glazes and the reconstruction of the way of their manufacture. *Archaeometry* 90:327-336.

Kopytoff, Ian, ed. 1987. *The African frontier: the reproduction of traditional African societies*. Bloomington: Indiana University Press.

Krige, E. 1965 [1936]. *The Social System of the Zulus*. Pietermaritzburg, South Africa: Shuter and Shooter.

Krige, E. and J. Krige. 1980 [1943]. *The realm of a rain queen*. Cape Town: Juta & Co., Ltd.

Kuper, A. 1980. Symbolic dimensions of the southern Bantu homestead. *Africa* 50:8-23.

———. 1982a. Lineage theory: a critical retrospect. *Annual Review of Anthropology* 11:71-95.

———. 1982b. *Wives for Cattle*. London: Routledge and Kegan Paul.

Kuman, K. A. 1989. Florisad and GI: the contribution of open air sites to the study of Middle Stone Age in southern Africa. MA thesis, University of Pennsylvania, Philadelphia, Pennsylvania.

Kusimba, Chapurukha M. 1999. *The rise and fall of Swahili states*. Walnut Creek, Ca.: Altamira Press.

———. 2007. The Collapse of Coastal City-States of East Africa. In *Archaeology of Atlantic Africa and the African Diaspora*. Akinwumi Ogundiran and Toyin Falola, eds. Pp. 160-184. Bloomington: Indiana University Press.

Kusimba, Sibel B. 2003. *African foragers: environment, technology, interactions*. Walnut Creek, Ca.: Altamira Press.

Kusimba, Sibel B. and Kusimba, Chapurukha M. 2005. Comparing prehistoric and historic hunter-gatherer mobility in southern Kenya. In *East African archaeology: foragers, potters, smiths, and traders*. Chapurukha M. Kusimba and Sibel B. Kusimba, eds. Pp. 1-16. Philadelphia: University of Pennsylvania Museum of Archaeology and Anthropology.

Lamberg-Karlovsky, C.C. 1985. The Near Eastern "break-out" and the Mesopotamian social contract. *Symbols* (Spring): 8-11, 23-24.

Lane, P. 1998. Engendered spaces and bodily practices in the Iron Age of southern Africa. In *Gender in African prehistory*. S. Kent, ed. Pp. 179-203. Walnut Creek, Ca.: Altamira Press.

Lane, P. and A. Segobye, eds. 1998. *Ditswa Mmung, the Archaeology of Botswana*. Gaborone, Botswana: Pula Press and The Botswana Society.

Latour, B. 2004. *Politics of nature: how to bring the sciences into democracy*. Cambridge, Mass.: Harvard University Press

LaViolette, A. and J. Fleisher. 2005. The archaeology of sub-Saharan urbanism: cities and their countrysides. In *African archaeology: a critical introduction*. Ann B. Stahl, ed. Pp. 327-52. Oxford: Blackwell.

Lazzari, Marisa. 2010. Landscapes of Circulaiton in Northwest Argentina: The workings of obsidian and ceramics during the first millennium AD. In *Social archaeologies of trade and exchange: exploring relationships among people, places, and things*. A. A. Bauer and A. S. Agbe-Davies, eds. Pp. 49-68. Walnut Creek, Ca.: Left Coast Press.

LeBorgne, E. 1955. Susceptibilie magnetique anormale de solsuperficiel. *Annales de Géophysique* 11:399-419.

———. 1960a. Etude expérimetale du trainage magnétique dans le cas d'un eseble de grains magnétiques très fins disperses dans une substance normagnétique. *Annales de Géophysique* 16: 445-494.

———. 1960b. Influence de fue sur les properties magnetiques du sol et sur celles du schist et du grande. *Annales de Géophysique* 16:159-95.

Lee, Richard. 1979. *The !Kung San: Men, women, and work in a foraging society*. Cambridge: Cambridge University Press.

Lee, Richard and Ivan DeVore. 1968. *Man the Hunter*. Cambridge, Mass.: Harvard University Press.

Lee, Richard B. and Mathias Guenther. 1995. Errors corrected or compounded? a reply to Wilmsen. *Current Anthropology* 36:298-305.

Lee-Thorp, J.A., K. Holmgren, S. E., Lauritzen, H. Linge, A. Moberg, T. C. Partridge, C. Stevenson, and P. D. Tyson. 2001. Rapid climate shifts in the southern African interior throughout the mid to late Holocene. *Geographical Research Letters* 28:4507-4510.

Leone, M. P. 1984. Interpreting ideology in historical archaeology: using the rules of perspective in the William Paca Garden in Annapolis, Maryland. In *Ideology, representation and power in prehistory*. C. Tilley and D. Miller, eds. Pp. 25–35. Cambridge: Cambridge University Press.

Lepionka, L. 1978. Excavations at Toutswemogala. *Botswana Notes and Records* 9:1-16.

———. 1979. Ceramics at Toutswemogala. *South African Archaeological Society Goodwin Series* 3:62-71.

Livingstone, David. 1959 [1875]. *Family Letters, 1841-1856*. I. Schapira, ed. London.

Loubser, J. N. 1988. Archaeological contributions of Venda ethnohistory. PhD dissertation, University of the Witwatersrand, Johannesburg, South Africa.

———. 1989. Archaeology and early Venda history. *South African Archaeological society Goodwin Series* 6:54-61.

———. 1990. Oral traditions, archaeology, and the history of the Venda *mitupo*. *African Studies* 49(2):13-42.

———. 1991. The ethnoarchaeology of Venda-speakers in southern Africa. *Navorsinge van die Nasionale Museum Bloemfontein* 7:145-464.

Magnavita C. and S. Magnavita. 2001. New evidence of proto-urban settlements in the Lake Chad area. *Nyame Akuma* 55:46-50.

Maher, B.A. 1986. Characterization of Soils by Mineral Magnetic Measurements. *Physics of the Earth and Planetary Interviews* 42:76-92.

Maher, B.A. and R.M. Taylor. 1988. Formation of Ultrafine-grained Magnetite in Soils. *Nature* 336:368-371.

Maher, B. A. and R. Thompson. 1999. *Quarternary Climates, Environments, and Magnetism*. Cambridge: Cambridge University Press.

Main, Mike. 1996. Archaeological sites: Tswapong Hills, Palapye. Report to the Senior Curator of Archaeology, National Museum, Monuments and Arts Gallery, Botswana. 2nd August.

Machacha, T. P., L. T. Maruatona, and K. Jennings. 1985. Serowe, Botswana Geological Survey Department, Lobatse.

Maisels, Charles K. 1987. Models of social evolution: trajectories from the Neolithic to the state. *Man* 22(2):331-359.

Marcus, J. 2008. The archaeology of social evolution. *Annual Review of Anthropology* 37:111-130.

Marquardt, William H. and Carole L. Crumley. 1987. Theoretical issues in the analysis of spatial patterning. In *Regional dynamics: Burgundian landscapes in historical perspective*. Carole L. Crumley and W. H. Marquardt, eds. Pp. 1-18. New York: Academic Press.

Matshetshe, Kabelo. 1998. Salt production and salt trade in the Makgadikgadi pans. BA thesis, University of Botswana, Gaborone, Botswana.

McCulloch, Warren S. 1945. A heterarchy of values determines by the topology of neural networks. *Bulletin of Mathematical Biophysics* 7:89-93.

McGuire, Randall H. and R. Paynter, eds. 1991. *The Archaeology of Inequality*. Oxford: Blackwell.

McIntosh, R. J. 1993. The pulse model: Genesis and accommodation of specialization in the Middle Niger. *Journal of African History* 34:181-212.

———. 1998. *The peoples of the Middle Niger*. Oxford: Blackwell.

———. 1999. Western representations of urbanism and invisible African towns. In *Beyond chiefdoms: Pathways to complexity in Africa*. S. K. McIntosh, ed. Pp. 56-65. Cambridge: Cambridge University Press.

McIntosh, Susan K. 1999. Pathways to complexity: An African perspective. In *Beyond chiefdoms: Pathways to complexity in Africa*. S. K. McIntosh, ed. Pp. 1-30. Cambridge: Cambridge University Press.

Mertens, A. 1966. *Children of the Kalahari*. London: Collins.

Meyer, A. 1980. 'n Kulutuurhistoriese interpretasie van die Ystertydperk in die Nasionale Krugerwildtuin. PhD dissertation, University of Pretoria, Pretoria, South Africa.

———. 1997. Settlement sequence in the central Limpopo valley: the Iron Age sites at Greefswald. In *Research by the National Cultural History Museum, Volume 6*. J. Van Schalkwyk, ed. Pp.9-42. Pretoria: National Cultural History Museum.

———. 1998. *The archaeological sites of Greefswald: Stratigraphy and chronology of the sites and a history of investigations*. Pretoria: University of Pretoria Press.

Miller, Daniel. 1989. The limits of dominance. In *Domination and resistance*. D. Miller, C. Tilley, and M. Rowlands, eds. Pp. 63-79. London: Routledge.

Miller, Duncan R. 2002. Smelter and smith: metal fabrication technology in the southern African Early & Late Iron Age. *Journal of Archaeological Science* 29:1083-1131.

Miller, J. C. 1988. *Way of death: Merchant capitalism and the Angolan slave trade, 1730-1830*. Madison, Wi.: University of Wisconsin Press.

Mitchell, Peter J. 1996. Prehistoric exchange and interaction in southeastern southern

Africa: marine shells and ostrich eggshell. *African Archaeological Review 13*(1):35-76.

———. 2002. *The archaeology of southern Africa*. Cambridge: Cambridge University Press.

———. 2005. *African connections: An archaeological perspective on Africa and wider world*. Walnut Creek, Ca.: Alta Mira Press.

Mitchell, M. and G. Whitelaw. 2005. The archaeology of southernmost Africa from c.2000 BP to the early 1800's: a review of recent research. *Journal of African History* 46(2):209-241.

Mortimore, M. 1998. Roots in the African dust. Cambridge: Cambridge University Press.

Mosothwane, Morongwa N. 2010. Foragers among farmers in Iron Age Botswana? dietary evidence from stable isotopes. PhD dissertation, University of Witwatersrand, Johannesburg, South Africa.

Mothulatshipi, Sarah. 2009. The Character of Archaeological Landscapes of the Late PhD dissertation, University of Edinburgh, Edinburgh, Scotland.

Munsell. 1976. *Munsell book of color, glossy finish collection*. Baltimore, Md.: Kollmorgen Corp.

Murumbika, McEdward. 2006. Sacred powers and rituals of transformation: an ethnoarchaeological study of rainmaking rituals and agricultural productivity during the evolution of the Mapungubwe state, AD 1000 to AD 1300. PhD dissertation, University of Witwatersrand, Johannesburg.

Owens, M. D. 1995. Archaeological research at Modipe Hill, Kgatleng District: the

burials from 1994 excavations. *Botswana Notes and Records* 27:41-48.

Pauketat, Timothy R. 2003. Resettled farmers and the making of a Mississipian polity. *American Antiquity* 68:39-66.

———. 2004. The economy of the moment: cultural practices and Mississippian chiefdoms. In *Archaeological perspectives on political economies*. G. Feinman and L. Nicholas, eds. Pp. 25-40. Salt Lake City: The University of Utah Press.

Paynter, Robert. 1989. The archaeology of equality and inequality. *Annual Review of Anthropology* 18:369-399.

Pearson, N. 1995. Archaeological Research at Modipe Hill. Kgatleng District Survey and

Excavation, 1992 to 1995. *Botswana Notes and Records* 27:21-40.

Phaladi, S. G. G. 1991. Hunters and Gatherers and non-hunter gatherers: A lithic analysis from Nqoma, Tsodilo Hills, Botswana. MA thesis, Michigan State University, Michigan.

Pwiti, G. 2005. Southern Africa and the East African Coast. In *African archaeology: a critical introduction*. Ann B. Stahl, ed. Pp. 378-91. Oxford: Blackwell.

Plug, Ina. 1996. Seven centuries of Iron Age traditions at Bosutswe, Botswana: a faunal perspective. *South African Journal of Science* 92:91-97.

———. 2000. Overview of the Iron Age fauna from the Limpopo Valley. *South African Archaeological Society Goodwin Series* 10:117-126.

Popelka, R.S . et al. 2005. Laser ablation ICP-MS of African glass trade beads. In *Laser ablation ICP-MS in archaeological research*. R. J. Speakman and H. Neff, eds. Pp. 84-93. Albuquerque: University of New Mexico Press.

Price, T. Douglas and Gary M. Feinman, eds. 1995. *Foundations of social inequality*. London: Plenum Press.

———. 2010. *Pathways to power: new perspectives on the emergence of social inequality*. New York: Springer.

———. 2012. *Images of the Past*. Seventh edition. McGraw Hill.

Prinsloo, L. C. and P. Colomban. 2008. A Raman spectroscopic study of the Mapungubwe oblates: glass trade beads excavated at an Iron Age archaeological site in South Africa. *Journal of Raman Spectroscopy* 39:79-90.

Pwiti, G. 2005. Southern Africa and the East African coast. In *African archaeology: a critical introduction*. A. Stahl, ed. Pp. 378-391. Oxford: Blackwell.

Reid, Andrew. 2005. Interaction, marginalization, and the archaeology of the Kalahari. In *African archaeology: A critical introduction*. Ann B. Stahl, ed. Pp. 353-377. Oxford: Blackwell.

Reid, A., Sadr, K. and Hanson-James, N. 1998. Herding traditions. In *Ditswa Mmung: the archaeology of Botswana*. P. Lane, A. Reid and A. K. Segobye, eds. Pp. 81-100. Gaborone, Botswana: The Botswana Society.

Reid, D. A. M. 1996. Ntusi and the development of social complexity in southern Uganda. In *Aspects of African archaeology: papers from the 10th Congress of the Pan African Association*. G. Pwiti and R. Soper, eds. Pp. 621-627. Harare, Zimbabwe: University of Zimbabwe.

Renfrew, C. 1973. *Before civilization: the radiocarbon revolution and prehistoric Europe*. London: Jonathan Cape.

———. 1986. Introduction. In *Peer-polity interaction and sociopolitical change*. C. Renfrew and J. Cherry, eds. Pp. 1-18. Cambridge: Cambridge University Press.

Rightmire, G. 1970. Iron Age skulls from southern Africa re-assessed by multiple discriminant analysis. *American Journal of Physical Anthropology* 33:147-168.

Robbins, Lawrence H. 1990. The Depression Site: A Stone Age sequence in the Northwest Kalahari Desert, Botswana. *National Geographic Research* 6:329-338.

———. 1997. Eastern African advanced forager. In *Encyclopedia of precolonial Africa*. J.O. Vogte, ed. Pp 333-340. Walnut Creek, Ca.: AltaMira Press.

Robbins, Lawrence H. and M. L. Murphy. 1998. The Early and Middle Stone Age. In *Ditwammung*. P. Lane, A. Reid, and A. Segobye, eds. Pp.50-51. Gaborone, Botswana: Pula Press and The Botswana Society.

Robbins, Lawrence H., Alec C. Campbell, M. L. Murphy, G. A. Brook, P. Srivastava, and S. Badenhorst. The advent of herding in southern Africa: early AMS dates of domestic livestock from the Kalahari Desert. *Current Anthropology* 46(4):671-677.

Robbins, Lawrence H., M. L. Murphy, Alec C. Campbell,and G. Brook. 1998. Intensive mining of specular hematite in the Kalahari ca. AD 800–1000. *Current Anthropology* 39:144–150.

Robertshaw, Peter, ed. 1990. *A history of African archaeology*. London: Currey.

———. 1999. Seeking and keeping power in Bunyoro-Kitara, Uganda. In *Beyond chiefdoms*. Susan K. McIntosh, ed. Cambridge: Cambridge University Press.

Robertshaw, Peter, Michael D. Glascock, Marilee Wood, and R. S. Popelka-Filcoff. 2003. Chemical analysis of ancient African glass beads: a very preliminary report. *Journal of African Archaeology* 1:139-146.

Robertshaw, Peter, B. Rasoarifetra, Marilee Wood, R. Melchiorre, R. S. Popelka-Filcoff, and Michael D. Glascock. 2006. Chemical analysis of glass beads from Madagascar. *Journal of African Archaeology* 4:91-109.

Robertshaw, Peter, Marilee Wood, E. Melchiorre, R. S. Popelka-Filcoff, and Michael D. Glascock. 2010. Southern African glass beads: chemistry, glass sources, and patterns of trade. *Journal of Archaeological Science* 37:1898-1912.

Robin, Cynthia. 2002. Outside of houses: the practices of everyday life at Chan Noohol, Belize. *Journal of Social Archaeology* 2:245-268.

Robinson, K. R. 1958. Four Rhodesian Iron Age sites: a brief account of stratigraphy and finds. *Occasional Papers of the National Museum of Southern Rhodesia* 3A(22): 77-119.

———. 1959. *Khami Ruins*. Cambridge: Cambridge University Press.

———. 1960. Archaeological report. Sentinel Expedition. Bulawayo: Rhodesian Schools Exploratory Society. Pp. 22-29.

———. 1961. Excavations on the Acropolis Hill. *Occasional Papers of the National Museum of Southern Rhodesia* 3A: 193-226.

———. 1966. The Leopard's Kopje culture, its position in the Iron Age of Southern Rhodesia. *South African Archaeological Bulletin* 21:5-51.

———. 1974. Archaeology report. Expedition. Bulawayo: Rhodesian Schools Exploration Society. Pp. 8-10.

Rosen, Arlene. 2007. *Civilizing climate: the social impact of climate change in the Ancient Near East*. Lanham, Md.: AltaMira Press.

Rummery, T. A., J. Bloemandel, J. Dearing, and F. Oldfield. 1979. The Persistence of Fire Induced Magnetic Oxides in Soils and Lake Sediments. *Annales de Geophysique* 35:103-7

Sadr, Karim. 1997. Kalahari archaeology and the Bushman debate. *Current Anthropology* 38:104-112.

Sadr, Karim and X. Rodier. 2012. Google Earth, GIS and stone-walled structures in southern Gauteng, South Africa. *Journal of Archaeological Science* 39:1034-1042.

Sahlins, Marshall. 1963. Poor Man, rich man, chief: political types in Melanesia and Polynesia. *Comparative Studies in Society and History* 5:285-303.

Saitowitz, S. 1996. Glass beads as indicators of contact and trade in southern Africa, ca. AD 900 - AD 1250. PhD dissertation, Cape Town, University of Cape Town, South Africa.

Sassaman, Kenneth E. 2000. Agents of change in hunter-gatherer technology. In *Agency in archaeology*. M. Dobres and J. E. Robb, eds. Pp.148-168. London: Routledge.

Sassoon, H. 1983. Kings, cattle and blacksmiths: royal insignia and religious symbolism in the Interlacustrine states. *Azania* 18:93-106.

Schapera, Isaac. 1930. *The Khoisan Peoples of South Africa*. London: Routledge and Sons, Ltd.

Schibille, Nadine. 2011. Late Byzatine mineral soda high alumina glasses from Asia Minor: a new primary glass production group. *PLoS ONE* 6(4). e18970.

Schoeman, M. H. 2006. Clouding power? rain-control, space, landscapes and ideology in Shashe-Limpopo state formation. Phd dissertation, University of Witwatersrand, Johannesburg, South Africa.

Schoenbrun, D. L. 1998. *A green place, a good place: agrarian change, gender, and social identity in the Great Lakes region to the 15th century*. Portsmouth, NH: Heinemann.

———. 1999. The (in)visible roots of Bunyoro-Kitara and Buganda in the Lakes region: AD 800-1300. In *Beyond chiefdoms: Pathways to complexity in Africa*. Susan K. McIntosh, ed. Pp. 136-50. Cambridge: Cambridge University Press.

Schofield, J. 1937. Work Done in 1934: Pottery. In *Mapungubwe: Ancient Bantu civilization on the Limpopo*. L. Fouché, ed. Pp. 32-61. Cambridge: Cambridge University Press.

———. 1948. Primitive Pottery. Handbook Series No. 3. Cape Town: South African Archaeological Society.

Segadika, P. 1995. An Archaeological Study of Makape-Middle Stone Age Site in the Southern District. BA thesis, University of Botswana, Gaborone, Botswana.

Segobye, A. K. 1994. Farming communities in Botswana: an archaeological study of land use and settlement in the Mokgware Hills c. 10th-15th Centuries AD. PhD dissertation, Cambridge University, Cambridge, United Kingdom.

———. 1998. Daughters of cattle: the significance of herding in the growth of complex societies in southern Africa between the 10th and 15th centuries AD. In *Gender in African Prehistory*. S. Kent and J. Parkington, eds. Pp. 227-234. Walnut Creek, Ca.: AltaMira Press.

Service, E. R. 1962. *Primitive social organization: an evolutionary perspective*. New York: Random House.

Shaw, T., Sinclair, P., Andah, B., and A. Okpoko. The archaeology of Africa: foods, metals, and towns. London: Routledge.

Sherratt, S. 2010. Greeks and Phoenicians: perceptions of trade and traders in the early 1st millennium BC. In *Trade as social interaction: new archaeological approaches*. A. Agbe-Davies and A. Bauer, eds. Pp. 119-42. Walnut Creek, Ca.: Left Coast Press.

Sinclair, Paul, T. Shaw, and B. Andah. 1993. Introduction. In *The archaeology of Africa: food, metals and towns*. T. Shaw, P. Sinclair, B. Andah, and A. Okpoko, eds. Pp. 1-31. London: Routledge.

Sinclair, Paul. 1982. Chibuene: An early trading site in southern Mozambique. *Paideuma* 28:150-164.

———. 1987. *Space, time, and social formation: a territorial approach to the archaeology and anthropology of Zimbabwe and Mozambique c. 0-1700 AD*. Uppsala, Sweden: Societas Archaeologica Upsaliensis.

Singleton, T. 1996. The archaeology of a slave life. In *Images of the Recent Past: Readings in Historical Archaeology*. C. Orser, ed. Walnut Creek, Ca.: AltaMira Press.

Sloterdijk, P. 2011. *Bubbles: Spheres Volume I: microsperology*. Los Angeles: Semiotext(e).

Small, David B. 1995. Heterarchical paths to evolution: the role of external economies. In *Heterarchy and the analysis of complex societies*. Robert M. Ehrenreich, Carole L. Crumley, and Janet E. Levy, eds. Pp. 71-86. Archaeological Papers of the American Anthropological Association Number 6. Arlington, Va.: American Anthropological Association.

Smith, Adam T. 2003. *The political landscape: Constellations of authority in early complex polities*. Berkeley, Ca.: University of California Press.

Smith, Jeanette. 2005. Climate change and agropastoral sustainability in the Shashe/Limpopo river basin from AD 900. PhD dissertation, University of the Witwatersrand, Johannesburg, South Africa.

Smith, Jeanette and S. Hall. 1999. Research directions on the archaeology of the Shashe-Limpopo area. *Wits Earth Science Newsletter* 30:10-11.

Stahl, Ann B. 1999. Perceiving variability in time and space: the evolutionary mapping of African societies. In *Beyond chiefdoms: Pathways to complexity in Africa*. S. K. McIntosh, ed. Pp. 39-55. Cambridge: Cambridge University Press.

———. 2001. *Making history in Banda: anthropological visions of Africa's past*. Cambridge: Cambridge University Press.

———. 2004. Political economic mosaics: archaeology of the last two millennia in tropical sub-Saharan Africa. *Annual Review of Anthropology* 33:145-72

Stahl, Ann B. and Adria LaViolette. 2009. Introduction: current trends in the archaeology of African history. *International Journal of African Historical Studies* 42(3):347-350.

Stein, G. J. 1999. *Rethinking world-systems: diasporas, colonies, and interaction in Uruk Mesopotamia*. Tucson: University of Arizona Press.

Steyn, M. 1994. An assessment of the health status and physical characteristics of the prehistoric populations from Mapungubwe. PhD dissertation, University of the Witwatersrand, Johannesburg, South Africa.

———. 1995. Human pot burial from Greefswald. *South African Journal of Ethnology* 18(2):87-90.

Steyn, M. and M. Hennenberg. 1994. Cranial and postcranial growth reconstructed from skeletal material from the Iron Age site of K2. *Journal of Anatomy* 185(3):692.

———. 1995. The health status of the people from the Iron Age site of K2 and Mapungubwe (South Africa). *Rivista di Anthropologia* 73:159-164.

———. 1996. Skeletal growth of children from the Iron Age site at K2 (South Africa). *American Journal of Physical Anthropology* 100(3):389-396.

———. 1997. Odontometric characteristics of the people from the Iron Age sites K2 and Mapungubwe. *Homo* 48(1):62-71.

Summers, R. 1961. Excavations in the Great Enclosure. *Occasional Papers of the National Museums of Southern Rhodesia* 3(23A):236-288.

Swift, J. 1996. Desertification: narratives, winner and losers. In *The lie of the land: challenging perceived wisdom on the African environment*. M. Mearns and R. Leach, eds. Oxford: The International African Institute in association with James Currey.

Theal, G. McCall. 1898. *Records of South Eastern Africa: Collected in Various Libraris and Archive Departments in Europe, Volume 1*. London: William Clowks axd sons, limited.

Thebe, P.C. 2004. Paradigms in stone lithic technology at Bosutswe and Matlapaneng: the Iron Age of Botswana. MA thesis, University of Texas at Austin, Austin, Texas.

Thomas N. 1991. *Entangled objects: exchange, material culture, and colonialism in the Pacific*. Cambridge, Mass.: Harvard University Press.

Thompson R., and F. Oldfield. 1986. *Environmental Magnetism*. London: Allen and Unwin.

Thorp, C. 1984. Faunal Remains as Evidence of Social Stratification at Great Zimbabwe. MA thesis, University of the Witwatersrand, Johannesburg, South Africa.

———. 1995. *Kings, Commoners and Cattle at Zimbabwe Tradition Sites*. Museum Memoir Series No. 1. Harare, Zimbabwe: National Museums and Monuments of Zimbabwe.

———. 1997. Evidence for interaction from recent hunter-gatherer sites in the Caledon Valley. *African Archaeological Review* 14:231-256.

Tite, M. S. 1972. Methods of physical examination in archaeology. New York: Academic Press.

Tite, M. S. and C. E. Mullins. 1970. Magnetic Prospection of Soils. *Prospezioni Archaeologiche* 5:111-112.

———. 1971. Enhancement of the Magnetic Susceptibility of Soils on Archaeology Sites. *Archaeometry* 14:229-236.

Tite, M. S. and R. E. Lenington. 1975. Effect of Climate on Magnetic Susceptibility of Soils. *Nature* 256:65-66.

Tlou, T. and A. Campbell. 1996. *History of Botswana*. Macmillan Botswana: Gaborone.

Trigger, Bruce. 2003. *Understanding early civilizations: a comparative study*. New York: Cambridge Press.

Trimingham, J. 1975. The Arab geographers and the East African coast. In: *East Africa and the Orient: cultural syntheses in pre-colonial times*. R. Rotberg and H. Chittick, eds. Pp. 115-146. New York and London: Africana Publishing Company.

Tyson, P. D. and J. A. Lindesay. 1992. The climate of the last 2000 years in southern Africa. *The Holocene* 2:271-278.

van Waarden, C. 1990. Archaeological impact assesment, Letsibogo Dam: dam sites 4 and 5 and their resevoirs. Unpublished Report, on file at the National Museum of Botswana.

———. 1998. The Later Iron Age of Botswana. In *Ditswa Mmmung: The Archaeology of Botswana*. P. Lane, P., D. A. M. Reid, D.A.M., and A. K. Segobye, eds. Pp. 117-153. Gabarone, Botswana: Pula Press and The Botswana Society.

Verstraete, M. M. and S. A. Schwartz. 1991. Desertification and global change. In *Vegetation and climate interactions in semi-arid regions*. A. Henderson-Sellers and A.J. Pittman, eds. Pp. 3-13. London: Kluwer Academic Publishers.

Voigt, C. A. M. 1983. *The traditional mural art of the Pedi of Sekhuneland*. MA thesis, University of Witwatersrand, Johannesburg, South Africa.

Vogel, J. C., A. S. Talma, A. Fuls, E. Visser, and B. Becker. 1993. Pretoria calibration curve for short-lived samples, 1930-3350 BC. *Radiocarbon* 35(1):73-86.

Wailes, Bernard. 1995. A case study of heterarchy in complex societies: early Medieval Ireland and it archaeological implications. In *Heterarchy and the analysis of complex societies*. Robert M. Ehrenreich, Carole L. Crumley, and Janet E. Levy, eds. Pp. 55-70. Archaeological Papers of the American Anthropological Association Number 6. Arlington: American Anthropological Association.

Walker, N. J. 1983. The significance of an early date for pottery and sheep in Zimbabwe. *South African Archaeological Bulletin* 38:88-92.

———. 1995. Late Pleistocene and Holocene hunter-gatherers of the Matopos, an archaeological study of change and continuity in Zimbabwe. Uppsala, Sweden: Societas Archaeolgica Upsalenis.

Walton, J. 1956a. Points from Correspondence. Mapungubwe and Bambandyanalo. *South African Archaeological Bulletin* 11(41):27.

Walton, J. 1956b. Points from Correspondence. Mapungubwe and Bambandyanalo. Reply to Gardner. *South African Archaeological Bulletin* 11(44):111.

Weedman, K. J. 1992. Foragers, pastoro-foragers, and agro-pastoralists: lithic use in Botswana from the 2nd millenium BC through the 19th Century. MA thesis, University of Texas at Austin, Austin, Texas.

Wesson, Cameron B. 2008. *Households and hegemony: Early Creek prestige goods, symbolic capital, and social power*. Lincoln: The University of Nebraska Press.

Whitty, A. 1961. Architectural style at Zimbabwe. *Occasional Papers of the National Museum of Southern Rhodesia* 3A: 289-305.

Wieschhoff, H. A. 1941. The Zimbabwe-Monomotapa culture in southeast Africa. *General Series in Anthropology 8*. Menasha, WI: George Banta.

Wiessner, P. 1984. Reconsidering the behavioral basis for style: a case study among the Kalahari San. *Journal of Anthropological Archaeology* 3:190-234.

———. 1997. Seeking guidelines through an evolutionary approach: style

revisited among the !Kung San (Ju/'hoansi) of the 1990s. *Archaeological Papers of the American Archaeological Association* 7(1):157-176.

Wilmsen, Edwin. 1989. *Land filled with flies*. Chicago: Chicago University Press.

Wilmsen, Edwin and James R. Denbow. 1990. Paradigmatic history of San-speaking peoples and current attempts at revision. *Current Anthropology* 11:489-524.

Wilmsen, Edwin, David Killick, Dana Rosenstein, Phenyo Thebe, and James R. Denbow. 2009. The social geography of pottery in Botswana as reconstructed by optical petrography. *Journal of African Archaeolog*y 7:3-39.

Welbourne, R. G. 1975. Tautswe Iron Age site: its yield of bones. *Botswana Notes and Records* 7:1-16.

Wright, Henry T. 1984. "Prestate Political Formations." In *On the evolution of complex societies: essays in honor of Harry Hoijer 1982*. Timothy K. Earle, ed. Pp. 41-77. Malibu, CA: Undena Publications.

Wood, Marilee. 2000. Making connections: relationships between international trade and glass beads from the Shashe-Limpopo area. In *African naissance: the Limpopo Valley 1000 years ago*. M. Lesley and T.M. Maggs, eds. Pp. 78-90. South African Archaeological Society Goodwin Papers 8. Cape Town: South African Archaeological Society.

———. 2005. Glass beads and pre-European trade in the Shashe-Limpopo region. MA thesis, University of Witwatersrand, Johannesburg, South Africa.

———. 2011. A glass bead sequence for southern Africa from the 8th to the 16th century AD. *Journal of African Archaeology*. 9(1):67-84.

———. 2012. *Interconnections: glass beads and trade in southern and eastern Africa and the Indian Ocean: 7th to 16th centuries AD*. Uppsala, Sweden: University of Uppsala.

Wood, Marilee, Laure Dussubieux, and Peter Robertshaw. 2012. Glass finds from Chibuene, a 6th to 17th century AD port in southern Mozambique. *South African Archaeological Bulletin* 67:59-74.

Yoffee, N. 1993. Too many chiefs? (or, safe texts for the '90's). In *Archaeological Theory: Who sets the agenda?* N. Yoffee and A. Sherratt, eds. Pp. 60-78. Cambridge: Cambridge University Press.

———. 2005. *Myths of the archaic state: evolution of the earliest cities, states, and civilizations*. Cambridge: Cambridge University Press.

Zagarell, Allen. 1995. Hierarchy and heterarchy: the unity of opposites. In *Heterarchy and the analysis of complex societies*. Robert M. Ehrenreich, Carole L. Crumley, and Janet E. Levy, eds. Pp. 87-100. Archaeological Papers of the American Anthropological Association Number 6. Arlington, Va.: American Anthropological Association.